THE IRON TRADE REVIEW

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MORE ACTIVITY

IN SOME LINES, BUT OFTEN AT LOWER PRICES

Concessions on Billets and Bars.—Railroads Buying Mors Freely, But Not in Large Quantities.—Sales of Coke.

Increased activity in some lines, but usually at the expense of prices, and an intense interest in the pig iron situation, especially in connection with the general meeting of pig iron manufacturers to be held in New York Thursday, have characterized the market during the past week. Our reports from Great Britain and Germany indicate that conditions in those countries are gradually getting worse, showing that the present depression is common to the three great iron and steel producing nations.

Iron Ore Men Firm

A few inconsequential sales of iron ore have been made within a few days. Most furnace men consistently maintain their position in opposition to lower prices, but others are endeavoring to obtain concessions without any prospect of succeeding.

Lower Prices for Billets

The present high price of billets, as compared with pig iron, is generally considered the most vulnerable point of the price schedule on crude steel and finished products. It is reported that a New York state concern has closed with a customer in the Pittsburg district for 7,000 tons of open-hearth billets at about $3 per ton below the regular prices.

Pig Iron Conditions

Pending the decision as to prices to be made at the New York meeting, few sales of any considerable tonnage are reported, but many inquiries are pending, and some 6,000 tons were sold in the Chicago district, including 1,000 tons of malleable. We note the sale of 1,000 tons to a Cleveland foundry at $14.45 valley, the iron to contain not less than 2 50 per cent silicon, which in ordinary times would be considered No. 1 iron.

Shading Bar Prices

Shading of prices of both steel and iron bars is reported at Chicago. A slight improvement is noted in orders for plates, and the plate mills of the Illinois Steel Co. will resume next Monday, with a prospect of being able to run for some time. In structural material, considerable improvement has developed in the east, and expenditures for school buildings and other public structures in the city of New York will require heavy tonnages. In the Chicago district, a number of important enterprises are being held up, owing to the expectation of lower prices, of which there seems to be no prospect.

Railroad Purchases

The Chicago, Minneapolis & St. Paul has ordered 50 locomotives, and the Delaware, Lackawanna and Western 49, and a large contract for track fastenings has been made by the New York Central lines. Railroads are showing an increasing disposition to place orders, but not for large quantities.

Cast Iron Pipe Orders

Some orders of good size for cast iron pipe have been taken, including 5,000 tons for St. Louis, 1,000 tons for Saginaw, Mich., and 700 tons for Jefferson, O., with very low prices prevailing.

More Buying of Coke

Foundries are making some contracts for coke for the last half of the year, and one furnace interest has purchased 50,000 tons at the low price of $1.55 at the ovens. The scrap market is weak, especially in Chicago, where some very large tonnages of old material are being offered by the railroads.

Pig Iron Production

Our monthly blast furnace statistics show a production of 1,155,100 tons in April, compared with 1,229,856 tons in March, the daily production for April being 38,503, and for March 39,672 tons.

LARGE ORDER FOR TRACK FASTENINGS.

(Special Telegram.)

New York, May 6.—Practically all of the order for track fastenings of the New York Central lines, mention of which was made in THE IRON TRADE REVIEW of April 30, will be placed with the Illinois Steel Co. That part of the order for the Lake Shore & Michigan Southern only has been placed, amounting to 17,500 kegs of spikes, 600 kegs of bolts and 1,500 tons of angle bars. The requirements of the Michigan Central and Big Four have not been determined.

The American Steel Foundries bought 2,000 tons of ferro-manganese at about $39 f. o. b. Baltimore.

FIRST ORE SHIPMENT.

(Special Telegram.)

Chicago, Ill., May 6.—The first ore to be shipped from the head of the lakes this year left Allouez docks May 4, in the steamer John A. McGean. It was a consignment of 7,500 tons of Laura ore for the Inland Steel Co. The mines now shipping to the docks are the Laura, which has 15,000 tons in cars, the Alexandria of the Republic Iron & Steel Co., which will send down 15,000 tons, and the Commodore of Corrigan, McKinney & Co., which will start sending 60,000 tons to the dock. It is expected that about 100,000 tons will be shipped in May, as compared with 107,000 tons in April last year and nearly 1,000,000 tons in May.

THE WEEK IN IRON CENTERS

PITTSBURG.

Still Lower Prices on Pig Iron—Some Improvement in Sentiment.

Office of THE IRON TRADE REVIEW, 510 Park Bldg., May 5.

The absorbing feature of the present iron and steel situation is the renewed effort being made to bring the pig iron market back to a stable basis. The meeting of furnace interests to be held in New York on Thursday of this week will represent the third attempt, at least, to include pig iron within the policy of price uniformity now being applied, and which, as respects other iron and steel products, is being especially well observed, generally speaking. How well these plans for readjustment of pig iron have succeeded, is answered in the state of prices now prevailing which has forced foundry and Bessemer irons to the lowest point in the business depression.

It has been readily appreciated by iron and steelmakers that the increasing unsteadiness of pig iron and the apparent absence of a common notion of values among producers have, by effect, impaired the whole iron and steel structure and have threatened to promote that which is so earnestly sought to be avoided, a demoralized market. The presence of so many conflicting factors within the pig iron circle itself has, however, up to this time, effectually obstructed the success of any movement directed toward a sound and concerted action. The indications are that Thursday's meeting will be largely attended by furnace representatives and hope is entertained that definite results may be accomplished.

In the meantime, the attention of buyers and sellers of pig iron is being turned toward the meeting. The increased activity in the market, which has come with the exceedingly low prices of the past several weeks, has temporarily subsided in the expectation of the disposing or confirming of the current reports that a new basing price is under consideration.

Among the other iron and steel products, there is little to be reported as to the progress of recovery. The entire market is moving along evenly under a fairly steady flow of small order business, but the extreme caution as to the future being shown by consumers in their purchases is restraining a normal demand and fuller mill operations.

Some improvement in sentiment is noted and among certain large interests the belief is hazarded that a turn in the situation has appeared and that more hopeful prospects are presented. In respect to specifications received by some large companies, May has started off with a substantial increase over a corresponding period in April, but this cannot be regarded as truly significant, as the earlier part of the latter month was not particularly active as to tonnage booked.

Pig Iron.—Pending the result of the meeting of furnace interests in New York this week, a continuation of the increased activity in pig iron which has come with the recent excessively low prices, has been temporarily blocked. Enough transactions have been put through in the past week, however, to indicate further weakness in some grades, induced in part, doubtless, by the efforts of some furnaces to dispose of as much tonnage as possible before adjusting their policies to any new concerted plan that might arise. Several sales of No. 2 foundry of from 100 to 300 tons for quick delivery were closed at the $14.75 valley basis, which now appears as the general market level and reports of lower prices are not infrequent. We note the sale in the week of 1,000 tons to a Cleveland melter at $15.35 delivered or $14.45 valley furnace. The iron was classed as No. 2 in the contract, but in analysis was above the standard specifications for this grade. This deal has brought out the lowest price yet named in the present unsettled market and is in addition to a similar sale in the Cleveland territory several weeks ago. As respects business in prospect, there is a better tone to the foundry iron market, and this is believed to have been developed, both by an increased demand for castings and a conviction among buyers that present prices have about touched bottom. The disinclination of most furnaces to sell for extended deliveries at present prices is also promoting a livelier spot trade. Bessemer is another grade that seems to be losing ground. Quotations of $16 valley or $16.90 Pittsburg for prompt shipment are known to have been made by some furnace interests and brokers the past week and a lot of 300 tons is said to have been placed at about this figure. Other small tonnage sales were made in the past week at $16.20, $16.25 and a shade higher. A lot of 1,000 tons of chill-cast Bessemer for May is reported to have brought $17.50 valley or $18.40 delivered to the consumer in this territory.

The average Bessemer price from the valleys during April was $16.59 or $17.49 delivered Pittsburg, against $16.96 or $17.86 delivered, in March, $17 or $17.90 delivered, in February and $18.10 or $19 delivered in January. Basic exhibits the most strength of any grade and is holding firm at about $15.50 furnace, although no sales of general market significance are reported this week. Inquiry for low-phosphorus iron has brought out prices approximating $22.50 Pittsburg. Stocks of Bessemer and basic in the valleys declined 2,200 tons in the past week and now stand at about 53,000 tons. Girard furnace, which has been on foundry, is preparing to blow out soon, but other valley operations are unchanged. Rumors of the probable adoption of a $10 Birmingham price have depressed the movement of southern iron at present. One of the large makers announces sales this month of 4,000 tons at $12 Birmingham. Less popular brands have been sold at $11.75 Birmingham and $11.50, but has also been done in some cases. On prompt and second quarter delivery on northern iron, we quote as follows:

Bessemer, valley	$16.00 to 17.00
Bessemer, Pittsburg	16.90 to 17.90
No. 1 foundry, Pittsburg	15.65 to 16.15
No. 2 foundry, Pittsburg	15.40 to 15.65
Gray forge, Pittsburg	15.15 to 15.40
Basic, valley	15.25 to 15.50
Basic, Pittsburg	16.15 to 16.40

Ferro-Manganese.—The ferro-manganese market is slowly gaining firmness, and sellers generally have elevated their prices about $1. The demand is by carloads with an occasional 100 ton or more inquiry. Ferro-silicon business is light. For prompt shipment we quote 80 per cent ferro-manganese at from $45 to $45.50 Pittsburg.

Imported 50 per cent ferro-silicon is quoted $77 Pittsburg on forward deliveries; domestic, 12 per cent, $29; 11 per cent, $28; 10 per cent, $27. The lower grades of imported ferro-silicon are quoted 50 cents lower. These quotations are applicable to Pittsburg territory.

Plates.—Though the volume of business is no greater, there is a little more inquiry in the plate line, which is more satisfactory to makers. Small order business continues to characterize the market, consumers delaying their orders until the last minute and then specifying only for actual needs. Operations of the mills are spasmodic. Some shading of prices on light gages is being done by small independent mills, but otherwise the market is very firm in price, and we quote:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.70c f. o. b. mill Pittsburg. Extras are as follows per 100 pounds. Boiler and flange steel plates, 0.10c; A. B. M. A. and ordinary fire-box steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive fire-box steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—A slow but steady betterment of sheet conditions is continuing. The galvanized grade remains the most active. Mill activities of the leading interest and independents are practically unchanged, the proportion of operations being about 50 per cent. There is shading of prices on some gages by several smaller mills. We continue to quote.

Black steel sheets, one pass, cold rolled: Nos. 11-12, 2.10c; Nos. 13-14, 2.15c; Nos. 15-16, 2.20c; Nos. 17-21, 2.25c; Nos. 22-24, 2.30c; Nos. 25-26, 2.35c; No. 27, 2.40c No. 28, 2.50c; No. 29, 2.60c; No. 30, 2.70c. Galvanized: Nos. 10-11, 2.45c; Nos. 12-14, 2.55c; Nos. 15-16, 2.65c; Nos. 17-21, 2.80c; Nos. 22-24, 2.95c; Nos. 25-26, 3.15c; No. 27, 3.35c; No. 28, 3.55c; No. 29, 3.70c; No. 30, 3.95c. Blue annealed: Nos. 11-12, 1.85c; Nos. 13-14, 1.90c; Nos. 15-16, 2c. Corrugated roofing, $1.75 per square for No. 28 painted, 2½-inch corrugation, and $3.10 per square on galvanized roofing, 2½-inch corrugation, No. 28.

Tin Plate.—The American Sheet & Tin Plate Co. this week put on its 11-mill Demmler plant, and resumed operations of the 10 mills of the Sabraton plant which had been idle temporarily for repairs. This gives the company an active capacity of 213 mills, which represents practically its entire workable equipment. Buying and specifying against contract by the canning interests are supporting the market on a normal basis. We quote:

Coke tin plate, 100-pound basis, 14 x 20, $3.70 f. o. b. mill, Pittsburg district. Terms, 30 days, less 2 per cent for cash in 10 days.

Rails and Track Material.—A little larger tonnage of standard sections is being moved against present contracts, but no new orders of note are reported in the week. The Edgar Thomson mills are operating steadily, but are gaited. Light rail business of the local maker is running along evenly, despite the low prices which the rerollers continue to name. The railroads are doing little contracting in standard spikes, and are buying largely on spot requirements. There has been a fair amount of business of the latter sort closed recently. On present specifications on Bessemer rails, we quote as follows:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $36; 12-pound, $32; 16-pound, $30; 20-pound, $29; 25 to 45-pound, $28; angle splice bars for standard sections, $1.65; standard spikes, $1.70 to $1.80 Pittsburg; hand spikes, $1.80 to $1.90 Pittsburg.

Steel.—Billets are not displaying any increase in activity, and the market is very dull. What little buying is under way is of the hand to mouth variety. Sheet and tin bars are in a good position relatively, and the mills rolling this material are being worked to almost full capacity at present. Prices on both billets, and sheet and tin bars are reported firm. We continue to quote Bessemer and open-hearth billets $28 Pittsburg, and forging billets at $30 Pittsburg, subject to the division of the freight charge over $1 and not exceeding $3, and sheet and tin bars at $29.50 Pittsburg, valley and Wheeling territory, and $29 Pittsburg for delivery to other points.

Hoops, Bands and Cotton Ties.—There is very little buying activity of cotton ties at this particular time. A falling off in the buying from coopers by the liquor interests is noted, due to prevailing conditions, and the hoop market has suffered accordingly. Reports of price cutting in hoops and bands are denied. We continue to quote the following official prices:

Cotton ties, 85c per bundle Pittsburg, plus the freight on lots of 3,000 bundles or more, and 88c per bundle Pittsburg for less than 3,000 bundle lots.

Hoops in carload lots, 2c; in less than carload lots, 2.10c; bands, 1.60c; base half extras as per standard steel.

Merchant Bars.—The trade in bars is devoid of particular feature, both iron and steel moving quietly. The expiration of first half contracts for steel bars about July 1 is expected to force a turn in the situation. Reinforcing bars are the most active line in the market, but rerollers have been naming some very low quotations. Bar iron prospects are a little better, and prices are holding fairly firm. Shafting prices are steady under the recently adopted schedule. The specialty market has been affected by the low quotations from rerolling propositions. We quote:

Common iron bars, 1.50c Pittsburg in carload lots and over; 1.60c in less than carloads; 1.47c to 1.50c base Pittsburg plus freight to point of shipment on western deliveries; Bessemer steel bars, 1.60c; plow and cultivator, 1.60c; channels, angles, zees, tees, under 3 inches, 1.70c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 56 per cent in carloads, and 52 per cent in less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. Planished and machine straightened tire steel is 1.80c base. Iron finished tire under 1½ by 1½ inches, 1.75c; iron finished tire, 1½ by 1½ inches and over, 1.60c base. All tire subject to ½ extra on the steel card.

On cold rolled strip steel, widths 1½ inch and wider and 0.100 inch and thicker, we quote base prices per 100 pounds, $3.60 on hard and $3.75 on soft.

Structural Material.—While there are more inquiries appearing and fabricators have more outstanding bids than for some time, the contracts being placed are comparatively few. Where work is being carried out, care is being taken to delay the placing of the steel until it is absolutely needed. This tendency is attributable to a desire to take advantage of any reduction in price, should such a development occur. The sentiment, nevertheless, seems improved, and the steel makers find more source for satisfaction in the situation. Fabricating prices show no improvement. A con-

tract for about 1,000 tons for new Y. M. C. A. and Y. W. C. A. buildings at Indianapolis has been placed. Prices for structural shapes are firm. We quote:

Beams and channels, 15-inch and under, 1.70c; over 15 inches, 1.80c; zees, 1.70c; tees, 1.75c; angles from three to six inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.70c base.

Merchant Pipe.—The demand for merchant pipe is being well maintained, and the gradual improvement noted for the past month is still in evidence. Oil country goods are more active, particularly on the Pacific coast, and affairs are shaping themselves so that some large inquiries are expected soon from gas interests. There are quite a number of fair-sized inquiries in the market. Jobbers' stocks generally are low, and buying is for both stock and direct consumption purposes. The occasional reports of shading in iron pipes are less frequent, and prices appear more firm. We continue to quote the following official discounts to consumers in carload lots, with an additional one point and five off to jobbers.

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch.....	65	49	63	..
⅜ inch	67	53	65	51
½ inch	69	57	67	55
¾ to 6 inches.....	73	63	71	61
7 to 12 inches.....	70	55	68	53
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch.....	58	46	56	44
½ to 4 inches.....	65	53	63	51
4½ to 8 inches.....	61	49	59	47
DOUBLE EXTRA STRONG PLAIN ENDS.				
¼ to 8 inches.....	54	43	52	41

Boiler Tubes.—Buying of boiler tubes is not active, but the market is not altogether dull. Railroad purchases are light and irregular. Prices by makers are being well maintained, and we continue to quote the following discounts:

	Iron.	Steel.
1 to 1½ inch.....	42	47
1¾ to 2¼ inch.....	42	59
2½ inch	47	61
2¾ to 5 inch.....	52	65
6 to 13 inch.....	42	59

2¼ inches and smaller, over 18 feet, 10 per cent net extra.
2¾ inches and larger, over 22 feet, 10 per cent net extra.

Wire Products. — The trade for wire products is steady at the present season. Jobbers are taking on stocks cautiously, however, and are watching the future very carefully. Fencing business is good. The Pittsburg Steel Co. expects to have its enlarged mill at Monessen completed on schedule time about July 1. Prices are unchanged, and we quote:

Wire nails, jobbers' carload lots, $2.05; retailers' carload lots, $2.10; less than carloads, $2.15; painted barb wire, $2.20 for jobbers in carloads; retailers in carloads, $2.25; and less than carloads, $2.35, with 30c for galvanizing; plain wire, 1.90c for jobbers, and 1.95c by carload.

Wire Rods. — There is some inquiry for Bessemer rods by manufacturers, but the activity is largely on specifications. We quote nominally $35 Pittsburg on Bessemer and $36 Pittsburg on open-hearth rods.

Coke. — A little more life in the coke trade, particularly in foundry brands, is apparent and this in connection with the more extensive inquiry for foundry pig iron, is indicative of a better melt in the iron castings line. Prices are no higher and some foundrymen, in the belief that the bottom of the market has about been reached, are placing contracts for the balance of the year. We note the sale of 10,000 tons of West Virginia foundry coke to a sanitary manufacturing interest for one year's delivery at Louisville, which is said to have brought an exceedingly low price. Another consumer originally ordering 1,000 tons of Connellsville coke, at about the prevailing prices, for May delivery, has already specified for 1,500 tons. We quote standard Connellsville foundry coke at from $2 to $2.25 ovens, according to the tonnage and delivery. Furnace coke shows little change and we quote the market on standard Connellsville brands at from $1.65 to $1.75 ovens for any delivery, although where special considerations were involved, less than this price has been done. The report of the *Courier* for the week ending April 25, shows 14,231 ovens active, 23,243 idle and a production of 164,858 tons, compared with 14,265 ovens and a production of 147,786 tons the previous week.

Old Material.—The old material market continues on the slow decline, in the almost entire lack of trade activity. The mills do not appear to be interested at any price. Cast scrap is relatively dear at the prevailing prices of foundry iron, and little is moving. The B. & O. has a list of about 3,000 tons on the market. We have revised our prices which are largely nominal, and quote as follows:

Heavy melting scrap, $12.50 to $13; rerolling rails, $14 to $14.25; bundled sheet scrap, $8.50 to $9; iron axles, $18.50 to $19.50; old iron rails, $15 to $16; No. 1 wrought scrap, $13.50 to $14; old car wheels, $13.50 to $14; low phosphorus scrap, $15.50 to $16; machine shop turnings, $8 to $8.50; cast borings, $7.25 to $7.75; No. 1 cast scrap, $14.25 to $14.75.

Work will continue at the foundry of the Dutcher Co., Milwaukee, which made assignment April 28, to E. J. Topping. The assignee has been permitted by the court to hire help and incur necessary expenses to complete present work at the foundry.

CHICAGO.

More Activity in Pig Iron—Shading of Prices in Iron and Steel Bars.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, May 5.

The absolute quiet into which the pig iron market has fallen was somewhat relieved during the past week by inquiries for close to 7,500 tons and sales covering the major portion of those inquiries. Particularly worthy of mention was the sale of 1,000 tons of malleable, the price being about $17 at the furnace. There has been no actual change in prices in either local or southern irons, but the situation in the south is being watched with much interest. Basing their anticipation on reports circulated a week ago pointing to a price of $10 at Birmingham, buyers of iron are talking and expecting a radical drop from the present level. There is no logical way of figuring how or why the price will go down to $10 and the furnace interests are not conceding this possibility in any instance. The first authentic report of concessions in iron bars in this territory, where up to this time the price has been well maintained, concerns the offer of a few days ago of a large tonnage at something less than 1.50c Chicago. Steel bars also are being shaded in some quarters, as are the smaller sizes of plates. The placing of structural contracts is being delayed materially in the hope of lower prices and fully 20,000 tons is being held back. During the week contracts were placed for about 7,000 tons of cast iron pipe, the principal letting being at St. Louis. The scrap market has developed increased weakness and the offering of more than 18,000 tons of railroad scrap in the last week will contribute further to the tendency. The uncertainty in the market regarding the future of prices is everywhere apparent in the attitude toward purchases. There is very good reason to believe that a proper and orderly readjustment of prices will come and in the meantime the only policy to pursue is the buying of material for immediate needs.

Pig Iron.—The week under review was one of the more active periods that occasionally develop out of the routine dullness. Aside from the large volume of speculative inquiry which was brought out by the rumors of a $10 price for southern iron, there was a very fair inquiry of a bonafide character. An aggregate tonnage of about 6,000 tons was sold, consisting of 1,500 tons of southern iron, a part of which was 4 per cent silvery, 1,000 tons of malleable, 2,000 tons of basic and the balance small quantities of both northern and southern foundry grades. The sale of 1,000 tons of malleable is almost remarkable by comparison, for not more than 700 tons had been sold in this market previously since January.

The Grand Crossing Tack Co. took its monthly quota of basic, obtaining the iron from the Inland Steel Co. It is understood that the concession from $17 furnace, required to take the business, was very slight. It is also reported that an inquiry for 2,000 tons of high phosphorus iron is in the market with the prospect of being closed in a few days. The price situation, so far as local irons are concerned, is unchanged. Regarding the southern outlook buyers are more or less in a quandary and there is a very apparent interest in the developments from conferences in the east. The lowest price known to have been made on actual sales is $11.50 and that on a limited number of small lots for prompt shipment. The ruling price continues to be $12 and the majority of business is going at that price or a little less. We quote, Chicago delivery, as follows:

Lake Superior Charcoal	$20.50 to 21.00
Northern Foundry No. 1	17.50 to 18.00
Northern Foundry No. 2	17.00 to 17.50
Northern Foundry No. 3	16.50 to 17.00
Southern Foundry No. 1	16.35 to 16.85
Southern Foundry No. 2	16.35
Southern Foundry No. 3	15.85 to 16.35
Southern Foundry No. 4	15.35 to 15.85
Southern No. 1 Soft	16.35 to 16.85
Southern No. 2 Soft	16.35
Southern Gray Forge	15.35 to 15.85
Southern Mottled	15.10 to 15.60
Southern Silveries, 4 per cent Silicon	17.85 to 18.35
Southern Silveries, 5 per cent Silicon	18.35 to 18.85
Southern Silveries, 6 per cent Silicon	19.35 to 19.85
Jackson Co. Silveries, 6 per cent	18.90 to 19.40
Jackson Co. Silveries, 8 per cent	20.90 to 21.40
Jackson Co. Silveries, 10 per cent	22.90 to 23.40
Malleable Bessemer	17.50 to 18.00
Standard Bessemer	18.40 to 18.90
Alabama Basic	17.35 to 17.85

Billets and Rods.—There is no interest in billets in this market, much less actual inquiry. We quote unchanged prices as follows: Rolling billets, $29.50; forging billets, $31.50 for Chicago delivery. We quote f. o. b. Pittsburg, Bessemer wire rods, $35; open-hearth, $36, and chain rods, $37.

Merchant Bars.—One local bar mill reports that April showed the heaviest rolling of iron bars since October, which indicates the gradual improvement. The activity of the mills is intermittent still and this week a large part of the capacity is temporarily idle. Less of a tendency to push hard steel bars at the low prices seems to prevail, but at the same time there is little doubt that small concessions are being granted on soft steel bars. Taken in the aggregate, there has been a fair volume of buying of steel, though no individual tonnages of size are reported. Until very recently it has been understood that bar iron prices were being well maintained, but it is authoritatively reported that in the last few days a round tonnage of bars was offered locally by a mill at something less than 1.50c Chicago, which is $3 a ton off the schedule price. We quote for mill shipment, Chicago delivery, as follows:

Bar iron, 1.65c to 1.68c; soft steel bars and bands, 1.78c, half extras; soft steel angles, less than 3 x 3, 1.88c; hoops, 2.18c base, full extras; planished or smooth finished tire steel, 1.98c; iron finish, up to 1½ x ½ inch, 1.93c base tire card; iron finish, 1½ x ½ inch and larger, 1.78c base, steel card; channel for solid rubber tire, ¾ to 1 inch, 2.28c, and 1⅛ inch and larger, 2.18c; smooth finished machinery steel, 2.18c; flat sleigh shoe 1.83c; concave and convex sleigh shoe, 1.93c; cutter shoe, 2.36⅛c; toe calk steel, 2.33c; railway spring, 1.98c; crucible tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are 56 per cent off the list for carload lots, and 52 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 2.10c, full extras; soft steel bars, $2 per 100 pounds base, plus half extras; soft steel hoops, 2.40c; full extras.

Plates.—The last week brought a better assortment of plate orders than has appeared for some time. Distributed among railroad, manufacturer and jobber was an aggregate of about 1,200 tons of large plates running 100 inches and over and ¼ inch thick. It is significant that plates under 80 inches can be obtained from smaller independent mills at concessions of $2 a ton and to such mills orders are going. The plate mill of the Illinois Steel Co. will be started up on Monday next and probably will have a run ahead of it of some length to take care of the accumulation of orders and specifications through a number of weeks in which it has been idle. We quote prices asked by the leading interests as follows:

Plates, ¼ inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.88c to 1.91c Chicago. For extras see Pittsburg report. Jobbers' prices for shipment from local stocks are as follows: Tank steel, ¼ inch and heavier, up to 72 inches wide, 2.10c to 2.20c; from 72 to 96 inches wide, 2.20c to 2.30c; 3/16 inch up to and including 60 inches wide, 2.20c to 2.25c; 72 inches wide, 2.45c to 2.55c; No. 8, up to 60 inches wide, 2.20c to 2.25c. Flange and head quality, 25c extra.

Sheets.—The movement of sheets is holding up fairly well, the activity being largely from stock because of the small quantities in which sales are made. The demand for blue annealed is steady, but the lighter gages in black sheets are less active than galvanized. Prices remain unchanged and we quote for Chicago delivery from store. For mill prices see Pittsburg report.

No. 10, 2.20c to 2.25c; No. 12, 2.25c to 2.30c; No. 14, 2.30c to 2.35c; No. 16, 2.40c to 2.50c; Nos. 18-20, 2.60c to 2.65c; Nos. 22-24, 2.65c to 2.70c; No. 26, 2.70c to 2.75c; No. 27, 2.75c to 2.80c; No. 28, 2.85c to 2.95c; No. 30, 3.25c. Galvanized sheets, Nos. 10 to 16, 3.05c to 3.15c; Nos. 18 to 20, 3.15c to 3.25c; Nos. 22 to 24, 3.30c to 3.35c; No. 26, 3.50c to 3.55c; No. 27, 3.70c to 3.75c; No. 28, 3.90c to 4.00c; No. 30, 4.40c to 4.50c.

Structural Steel.—With the exception of one contract of modest amount in San Francisco, which is known to be delayed for financial reasons, all of 20,000 tons of orders for structural steel is being withheld in anticipation of lower prices. There is little to indicate how long this construction can be deferred. In the meantime but few contracts are being placed. The total placed with the local office of the leading fabricator did not exceed 1,000 tons in the last week and it was made up entirely of small tonnages. The Kenwood Bridge Co., located at Grand Crossing, was awarded the order for 600 tons of guard angles for the St. Paul railroad. The structurals for a bridge for the Frisco system amounting to 1,000 tons will be furnished by the Pennsylvania Steel Co. It is understood that the Bethlehem Steel Co. will furnish a part of the structural material for the Boley building in Kansas City, and the same company is now shipping shapes for the car underframes being built by the Bettendorf Axle Co. for the Chicago, Milwaukee & St. Paul road. The Born building, Chicago, will be erected by the Alling Construction Co., and will be built of reinforced concrete. No evidences have developed pointing more definitely to the future of prices and we quote:

Beams and channels, 3 to 15 inches inclusive, 1.88c to 1.91c delivered Chicago. For extras see Pittsburg report. Quotations from store are as follows for carload lots and over:

All angles, 3 inches and larger, including 6 inches, $2.05 per 100 pounds; angles, over 6 inches, $2.15 per 100 pounds, base; beams, 3 to 15 inches inclusive, $2.05 per 100 pounds, base; channels, 3 inches and larger, $2.05 per 100 pounds base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—Orders for 800 tons of high T traction rails were placed with the Pennsylvania Steel Co. This, with a 1,000-ton inquiry from the Chicago, Indianapolis & Louisville railroad (Monon), constituted all of the active tonnage reported. Some light rails are being sold each week, but concessions of $4 a ton are not uncommonly required to take the business and quotations as low as $23 have been made for stock rolled from old rails. The price of angle bars has been reduced to 1.50c base in carload lots. We quote:

Standard rails, $28 f. o. b. mill, full freight to destination; light rails, 25-pound to 45-pound, $28; 20-pound, $29; 16-pound, $30; 12-pound, $31. Track supplies, f. o. b. Joliet, angle bars, 1.50c in carload lots; spikes, 1.80c to 1.90c; track bolts, with square nuts, 2.30c to 2.40c; with hexagon nuts, 2.45c to 2.50c. Small railroad and square boat spikes, 1.90c base, f. o. b. Pittsburg.

Merchant Pipe and Boiler Tubes.—While April reports indicate some increase in the volume of tubular business during the month as compared with March, there was reason to hope 30 days ago that a very material improvement would develop. The character of buying, however, did not change and only current needs were taken care of, though the advancing season brought in orders of increased size. Repairs to boilers and locomotives are requiring a fair quantity of tubes, but the railroad buying of this material has not assumed anything like active proportions.

We quote mill discounts, Chicago delivery, carload lots, as below. On steel pipe jobbers are allowed a concession of one point and 5 per cent additional from the schedule in force.

	—Steel—	
	Black.	Galv.
¾ to 6 inches, inclusive....	71.2	61.2

BOILER TUBES.

	Steel.	Iron.	Seamless.
2¾ to 5 ins., inclusive..	63.2	50.2	49.2

Mill quotations on iron pipe are five points higher than the foregoing prices.

We have revised our prices from store, as below. A concession of one-half to one point from these prices is allowed by Chicago jobbers on carload orders shipped from local stocks. We quote for less than carload lots as follows:

MERCHANT PIPE.

	Black.	Galv.
⅛ to ¼ inch	64	48
⅜ inch	66	52
½ inch	68	56
¾ to 6 inches	71	62
7 to 12 inches	68	53

Store prices for wrought iron pipe, carload lots, from Chicago stocks, are as follows: One-eighth to ¼ inch, 59; ⅜-inch, 61; ½-inch, 63; ¾ inch to 6 inches, 68; 7 inches to 12 inches, 65. Boiler tubes from store are unchanged as follows:

	Steel.	Iron.	Seamless.
1 to 1¼ inches	35	35	35
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	35
2¾ to 5 inches	60	47½	47½
6 inches and larger	50	35	..

Cast Iron Pipe.—The past week witnessed the placing of a very encouraging tonnage of water pipe, but also some very low prices. The contract for 5,000 tons of pipe was let by the city of St. Louis to the United States Cast Iron Pipe & Foundry Co. The 1,000 tons of 16 and 24-inch pipe for Saginaw, Mich., will be furnished by the Massillon Iron & Steel Co. and the price, which included a $2 freight rate, was $21.50 for the 24-inch and $21.75 for the 16-inch. The same interest also took the contract for 700 tons of 4, 6 and 8-inch pipe at Jefferson, O., at about the same price. At Milan, Mich., the contract for about 400 tons is being let this week. There is no change in prices and we quote 4 to 6-inch, $27; 6 to 16-inch, $26; larger size, $25; gas pipe, $1 a ton higher.

Wire Products.—The movement of wire products is decreasing slightly and the April tonnage of orders was a trifle less than in March. It remains, however, that the interests handling material from producer to consumer are almost without any stock on hand, much less, in fact, than has been carried regularly. All the various forms of wire—fencing, nails, implements and the like—that have been shipped from the manufacturer in the past few months during which the demand has been good have already been put into service and all of the business that has transpired represents actual consumption. Prices, for the present, remain unchanged.

Wire nails, $2.23; painted barb wire, $2.38; galvanized barb wire, $2.68; smooth annealed wire, $2.08; smooth galvanized wire, $2.38; polished staples, $2.23; galvanized staples, $2.63. Carload lots to retailers, 5 cents higher; less than carload lots, 15 cents higher.

Coke.—The volume of coke moving in this territory changes but little from week to week. Occasionally the sales of a week embrace the purchase of coke for two or three months by a large interest, such as the buying of 10,000 tons by the leading agricultural implement manufacturer last week. This is routine, however, and does not represent increased operations. Prices are holding fairly steady at the low levels and we quote standard Connellsville furnace coke at $1.60 to $1.75 and foundry coke of similar grade, $2 to $2.25 at the ovens.

Old Material.—The market for scrap has weakened very apparently in the past week, but prices, being very low already, are affected in less degree by changes. It is reported that the large number of car wheels which the Rock Island railroad offered to sell was disposed of at $12.75. Re-rolling rails continue firm and in good demand. Cast scrap, although almost uniformly bringing out no better offers than $12, is reported to have been sold at $12.25 f. o. b. Chicago for one lot. A large tonnage of railroad scrap is being offered and lists will be sold as follows: Baltimore & Ohio, 5,200 tons; Chicago & Northwestern, 2,800 tons; Santa Fe, 3,650 tons; Big Four, 1,500 tons; Pennsylvania Lines, 4,000 tons; and a list from the Erie road, a total, exclusive of the Erie tonnage, of over 17,000 tons. Prices are without marked changes and we quote, gross tons in the first paragraph, as follows:

Old car wheels	12.50 to 13.00
Old iron rails	14.75 to 15.25
Re-rolling rails (3 ft. and over)	13.25 to 13.75
Old steel rails (3 ft. and under)	12.00 to 12.50
Light section relayers, 45 lbs. and under, subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	19.00 to 19.50
Frogs, switches and guards	11.50 to 12.00
Heavy melting steel	11.00 to 11.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.00 to 11.50
No. 2 R. R. wrought	10.00 to 10.50
Knuckles, couplers and springs	10.50 to 11.00
Shafting	14.00 to 14.50
Iron car axles	15.75 to 16.25
Steel car axles	15.00 to 15.50
Dealers' forge No. 1	9.00 to 9.50
Pipes and flues	7.75 to 8.25
No. 1 cast, 150 lbs. and less	11.50 to 12.00
No. 1 mill	6.75 to 7.25
Mixed busheling (Nos. 1 and 2)	6 50 to 7.00
Country sheet	5.25 to 5.75
No. 1 boiler cut	7.00 to 7.50
Boiler punchings	10.00 to 10.50
Cast borings	4.00 to 4.50
Mixed borings, etc	4.00 to 4.50
Machine shop turnings	6.00 to 6.50
Railroad malleable	10.00 to 10.50
Agricultural malleable	9.50 to 10.00
Stove plate and light cast scrap	9.75 to 10.25
Old iron splice bars	13.00 to 13.50

CLEVELAND.

Unsuccessful Effort to Obtain Concessions on Iron Ore—More Coke Sales.

Office of THE IRON TRADE REVIEW,
Browning Bldg., May 5.

Iron Ore.—Several small sales of ore have been made within a few days at regular prices, but this does not indicate a general buying movement. A representative of New Jersey blast furnaces came to Cleveland a few days ago and made an effort to place an order for ore at lower prices than those agreed upon, but found sellers firm as adamant in refusing to make any concessions. While some furnace interests are agitating in a mild way in favor of lower prices,

other furnace men are urging that absolutely no concessions be made. One furnace owner wrote to an ore company that the best thing that could happen to the trade would be a declaration not only that present prices would be maintained for 1908, but that they would also prevail in 1909. A few cargoes of ore will be loaded at the head of the lakes this week, but the movement of ore this month will be extremely light. The first vessels to load will receive cargoes at the docks of the Great Northern, at Superior, the only shipping port that has made arrangements for loading ore. About 15,000 tons of Laura ore will be shipped for the Inland Steel Co., to be delivered at Indiana Harbor. The Great Northern is handling about 25 cars per week, as compared with 300 or 400 cars a year ago. On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $5; Mesabi Bessemer, $4.75; old range non-Bessemer, $4.20, and Mesabi non-Bessemer, $4.

Pig Iron.—Transactions are very few and are confined almost entirely to small tonnages, the only sale of any consequence being 1,000 tons at $14.45, valley, the iron to run not less than 2.50 per cent silicon. In ordinary times this would be considered No. 1 iron, and the sale indicates that the market for No. 2 is not very far from $14, valley. For Cleveland delivery we quote as follows:

Bessemer	$17.00 to 17.25
No. 1 foundry	15.35 to 15.75
No. 2 foundry	15.00 to 15.25
No. 3 foundry	14.50 to 15.00
No. 2 southern	15.85 to 16.00
Gray forge	13.25 to 13.50
Lake Superior charcoal	20.00 to 21.00

Coke.—There has been more activity in the coke market, but at lower prices. One furnace interest has contracted for about five months' supply of from 9,000 to 10,000 tons per month, at $1.55 at the ovens. Foundries are showing more disposition to contract for last half when they can do so at $2 per ton. For standard furnace coke, we quote $1.55 to $1.60 at the ovens, and for high grade foundry coke, $2 to $2.15.

Finished Material.—New orders and specifications received by the largest interest this week have been unusually heavy, involving a large variety of products, including numerous railway orders. Other interests report only fair business, and jobbers state that they note very little, if any, improvement. The Empire and Union rolling mills have been running two weeks, but are not certain of being able to continue in operation next week.

Old Material.—The market remained dull, and few sales of importance were recorded. While no changes in price quotations over the previous week were noted, yet the market is undeniably weak, both in cast and wrought. Several important railway lists are nearly due, and this has no tendency to strengthen the market. The following prices, almost entirely nominal, are made f. o. b. Cleveland:

Old iron rails	$14.50 to 15.00
Old steel rails (re-rolling)	12.50 to 13.00
Old steel rails (under 6 ft.)	12.00 to 12.50
Old car wheels	12.50 to 13.00
Old steel boiler plate	9.00 to 10.00
Steel axles	14.50 to 15.00
Malleable iron (railroad)	12.50 to 13.00
Malleable iron (agricultural)	10.00 to 10.50
Heavy steel	11.00 to 11.50
Country mixed steel	10.00 to 10.50
Low phosphorus	13.00 to 13.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.50 to 12.00
No. 1 busheling	10.00 to 10.50
No. 1 machine cast	11.00 to 12.00
Iron axles	16.00 to 17.00
Axle turnings	7.00 to 7.50
Machine shop turnings	5.50 to 6.00
Grate bars	9.00 to 10.00
Pipes and flues	9.00 to 10.00
Tank iron	8.25 to 9.25
Hoop and band iron	5.25 to 6.25
Sheet iron	4.25 to 5.25
Wrought drillings	5.50 to 6.00
Stove plate	9.50 to 10.00
Cast borings	4.50 to 5.50

CINCINNATI.

More Sales of Pig Iron, But Price Tendency is Downward.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., May 5.

Some increase is shown in the tonnage sold through this market the past week. The demand for prompt shipment iron in fair amounts ranging from a carload to 100 tons is more pronounced and there has been an increase in this class of business. Some of the inquiries of which mention was made last week are still pending. Cast iron pipe makers have purchased to the extent of about 5,000 tons for prompt shipment. An inquiry for 3,000 tons for delivery in June, July and August and one for 2,000 tons for delivery over the remainder of the year are under consideration. It is said that a sale of basic iron was made to an Ohio melter on the basis of $14.50 for June furnace. The price situation is apparently a shade easier, as southern furnaces are in a more receptive mood and more inclined to consider firm offers. Buyers in this territory are in possession of quotations of $11.50 Birmingham for No. 2 foundry and transactions have been made at this price. The northern furnaces have not changed their schedules and prices in southern Ohio range from $15 to $16 at furnace with most of the operations declining to accept less than $16 at the furnace. Valley iron is openly quoted at $14.75 at furnace. Buyers appear to hold the belief that they will be able to buy in the near future at $10 Birmingham and a number of firm offers are coming in, indicating a willingness to buy on that basis. There is but little inclination on the part of consumers to cover for the third quarter, as the wide publicity given to the $10 price discussion at the New York meeting has had a tendency to unsettle the market. The first sale of charcoal iron in many weeks is reported on the basis of $19 Birmingham. The melt in this territory continues light and is apparently showing no improvement, but foundries are believed to be drawing upon their own stocks without replenishing. We quote for prompt delivery and second quarter, delivered Cincinnati, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, as follows:

	PER TON
Southern foundry No. 1	$15.25 to 15.75
Southern foundry No. 2	14.75 to 15.25
Southern foundry No. 3	14.25 to 14.75
Southern foundry No. 4	13.75 to 14.25
Southern No. 1 soft	15.25 to 15.75
Southern No. 2 soft	14.75 to 15.25
Southern gray forge	13.50 to 13.75
Northern No. 1 foundry	16.95 to 17.20
Northern No. 2 foundry	16.45 to 16.70
Northern No. 3 foundry	15.95 to 16.20
Northern 8 per cent silicon	19.70 to 20.20

Finished Material.—The market continues quiet and without material changes. Specifications on contracts are light and mail order business scant. Retail orders are filled here at the following prices:

Iron and steel bars, 1.85c to 2c, full extras. Angles, 3 x 3 and over, 2.10c to 2.25; beams and channels, 15 inches and under, 2.10c to 2.25c; small angles and architectural channels, 2c base; plates, ¼-inch and heavier, 2c; 3/16 inch, 2.10c; No. 8, 2.15c; sheets (blue annealed) No. 10, 2.15c to 2.25c; No. 12, 2.20c to 2.30c; No. 14, 2.25c to 2.35c; No. 16, 2.35c to 2.45c; box annealed sheets, Nos. 18 and 20, 2.55c to 2.65c; Nos. 22 and 24, 2.65c to 2.75c; Nos. 25 and 26, 2.70c to 2.80c; No. 27, 2.75c to 2.85c; and No. 28, 2.85c to 2.95c; boiler tubes, 2¼ to 5 inches, 62 per cent off base; turnbuckles, 45 per cent off; rivets, 3c base; cold rolled shafting, 47 to 50 per cent off list; steel tire, 2.05c to 2.10c base.

Coke.—The market continues dull with but little contracting and spot coke is easy at irregular prices. The following quotations represent contract prices in the leading coke producing districts. Spot coke sells at lower figures than contract.

	PER TON
Wise county furnace coke	$1.75 to 2.00
Wise county foundry coke	2.25 to 2.35
Pocahontas furnace coke	1.90 to 2.00
Pocahontas foundry coke	2.00 to 2.25
Connellsville furnace coke	1.70 to 1.90
Connellsville foundry coke	2.15 to 2.35

Old Material.—The market is dull and easy with consumers taking very conservative tonnages and there is lack of activity with no material change in quotations. We quote dealers' prices as follows:

Old No. 1 R. R. wrought, net tons	$11.00 to 12.00
Cast machine and fdy., net tons.	12.00 to 12.50
Old iron rails, gross tons	16.50 to 17.50
Old steel rails (re-rolling) gross tons	12.50 to 13.00
Old short lengths, gross tons	12.50 to 13.00
Old iron axles, net tons	16.50 to 17.50
Heavy melting scrap, gross tons	12.00 to 12.50
Stove plate, net tons	9.50 to 10.50
Wrought turnings	5.50 to 6.50
Cast borings, net tons	4.50 to 5.50
Car wheels, gross tons	16.50 to 17.50

The Rockdale furnace at Rockdale, Tennessee, will be put on ferro-phosphorus about July 1, and will make a 30 to 60 day run on this product. It is estimated that the production will analyze 18 to 22 per cent phosphorus. Rogers-Brown & Co. are the selling agents.

NEW YORK.

Important Structural Business Developing—Billets Sold at Low Price.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., May 5.

Pig Iron.—There is slightly more inquiry current than a week ago, indicating some recovery from the quietness following the recent circulation of bearish reports from the Pittsburg district, but business is still very light. The American & British Mfg. Co., New Britain, Conn., has inquiries out for 2,000 tons of No. 2 and 3 southern iron, for delivery in the third and fourth quarters, and there are other inquiries out for from carlots up to 500 tons. Interest is centered in the meeting this week of the Eastern Pig Iron Association and of the Pig Iron and Iron Ore committees on May 7 in this city. Any action rendering it reasonably certain that no changes in prices are in prospect will probably have the result of bringing out considerable business, as many melters are running from hand to mouth and will continue to do so as long as any uncertainty of this kind remains. Authorized prices are holding on small lots, but on considerable tonnages there is shading, and every transaction practically creates a market of its own. The British market is slightly lower, and no further sales for export from the southern field are to be discovered. There is brisk selling of coke, the range being from $2.25 to $2.50, ovens for 72-hour, and from $1.75 to $2.00 for furnace. We quote, tidewater delivery at New York, as follows:

Northern foundry No. 1	$18.00 to 18.50
No. 2X foundry	17.50 to 18.00
No. 2 plain	16.75 to 17.25
No. 2 southern foundry	16.00 to 16.50
Malleable	17.25 to 17.75
Basic	17.00 to 17.50
Gray forge	16.50 to 17.00

Ferro-Manganese.—A number of consumers have evidently decided that the present level is low enough to justify the laying in of stocks for some time ahead. One inquiry is current for 900 tons for the last half of the year and another calls for 1,200 tons for the first half of 1909. Producers are unwilling, however, to quote the current level, $43 to $44 seaboard, for such advanced delivery. A New Jersey concern has bought about 500 tons for advanced shipping and several small inquiries are now in circulation.

Finished Materials.—In structural materials the leading interest booked about 17,000 tons during April, or approximately half of the entire tonnage. The outlook for new business in New York is extremely bright. The city is to spend about $16,000,000 on new school buildings requiring 15,000 tons of steel, and the proposed municipal building, now in architects' hands, will require over 6,000 tons. About 5,000 tons is involved in further work at the South Ferry. Estimates are being asked on the Hotel Astor addition, 4,000 tons, and the Farmers' Loan and Trust building, 1,500 tons. A New York state concern has closed with a customer in the Pittsburg district for 2,000 tons of openhearth billets, the reported price being $25 delivered. The Chicago, Milwaukee & St. Paul has ordered 50 locomotives from the American Locomotive Co. and there is a 4,000-ton rail inquiry for export to Australia. Bids will be opened Friday on Brooklyn subway construction work to cost $15,000,000, and to require a big steel tonnage. Twenty-five contractors are figuring on the plans.

The Eastern Steel Co. has been awarded the contract for the steel required in a loft building on West Twenty-fourth street, New York City, being erected by the Thompson-Starrett Co., and is shortly to begin the delivery of steel on a Philadelphia project held up for several months, a railroad bridge at Belmont and Girard avenues. This is a concrete proposition, but will require about 700 tons of structural steel, principally I-beams for supporting the concrete floor and structural shapes for a number of trusses about which the concrete will be molded. The bridge shop of this company has been running full time on double turn, owing largely to a heavy contract for railroad viaduct work at Providence, R. I. Another large contract held by this company, which has been held up for some time, will probably be released in the early future.

Finished steel prices in this market are being well maintained, except that one interest is offering to ship less than carlots of structural materials at carlot prices, provided there be not less than 3,000 pounds over 20 feet in length. Bar iron is quiet and firmer prices are loked for, as it is understood that May 1 saw the expiration of the contracts with brokers which have been the route to the low figures heretofore current. Cast iron pipe is quiet, but New York City will close May 13 for about 2,800 tons of 30-inch pipe and for a lot of 20, 12 and 6-inch pipe totaling nearly 700 tons. We quote:

Angles, 3 to 6 inches x ¼ inch and heavier, 1.86c; beams, 3 to 15 inches, 1.86c; tees, 3 x ¼ inch and heavier, 1.91c; plates, carloads, tanks, 1.86c; marine boilers, 2.26c; bar iron, 1.56c; soft steel bars, 1.76c; sheets, No. 28, black, 2.66c.

Old Materials.—Heavy steel is slightly lower and the market generally is inactive, though some small inquiries are current. The consumption by mills is still exceedingly light and prices are accordingly low. We quote, gross tons, New York delivery, as follows:

Old iron rails	$15.50 to 16.00
Old steel rails, re-rolling	14.50 to 15.00
Relaying rails	20.00 to 21.00
Old car wheels	14.00 to 14.50
Old iron car axles	17.00 to 17.50
Old steel car axles	15.50 to 16.00
Heavy melting steel	10.50 to 11.00
No. 1 railroad wrought	13.00 to 13.50
Iron track scrap	11.50 to 12.00
Wrought pipe	9.00 to 9.50
Cast borings	5.00 to 5.50
Wrought turnings	7.50 to 8.00
Heavy cast scrap	13.00 to 13.50
Railroad malleable	11.00 to 11.50
Agricultural malleable	10.00 to 10.50
Stove plate	9.50 to 10.00
Grate bars	9.50 to 10.00

PHILADELPHIA

Pig Iron Buyers Are Awaiting Developments.

Office of THE IRON TRADE REVIEW. 408 Central Trust Bldg., May 5.

Pig Iron.—The persistent talk about reducing southern iron to $10 a ton, unlikely as such a course is, has had its natural effect in bringing the market to almost a complete standstill, pending the decision to be reached at the meeting in New York on Thursday. Buyers are holding off to see what will be done, and even at the concessions offered by independent and southern furnaces, are not disposed to commit themselves beyond small purchases for immediate use.

This attitude is, of course, quite justifiable under the circumstances, as everybody is anxious to get in at the lowest figures. It is needless to say that $10 southern iron, which would sell in Philadelphia at from $14.50 to $15, would put many northern furnaces out of business, as they cannot make pig iron at any such figure. Of course there are many consumers who do not want southern iron at any price, as it is not suitable for their needs, but their buying would not keep many furnaces going at the higher figures. Such purchasers are placing limited orders at the scheduled prices, and some concerns report a considerable number of inquiries, but the actual business coming to the furnaces seeking to maintain prices is very small. Pipe founders are still in the market for southern iron, but it cannot be learned that any important orders have been placed lately. Everybody seems to be waiting the action to be taken this week. Scheduled prices show no change, as follows.

No. 1X foundry	$18.75 to 19.25
No. 2X foundry	18.25 to 18.50
No. 2 plain	17.75 to 18.00
Standard gray forge	16.50 to 16.75
Basic	17.25 to 17.50
Low phosphorus	23.50 to 24.00
No. 2 Birmingham	15.70 to 16.20
No. 2 Virginia	17.50 to 18.00

Finished Material.—The pig iron situation is naturally influencing the finished material market, as any essential change in one must be reflected in the prices for the other. Structural material makes the best showing, there being a fair volume of small orders, but bar iron is very irregular, with sales ranging as low as 1.45c. Steel plates show moderate activity. Prices may be quoted as follows: Structural material, 1.85c to 2c, according to specifications; steel plates, 1.85c to 1.90c; refined iron bars, 1.45c to 1.55c; steel bars, 1.75c to 1.80c.

Old Material.—The market is absolutely featureless. The mills are buying very little, and the slow accumulation of scrap makes any advance in price seem unlikely for some time. An increase of 50 cents a ton in cast borings is the only change from last week's quotations, as follows:

Old steel rails	$14.75 to 15.25
No. 1 steel scrap	12.75 to 13.25
Old steel axles	17.00 to 17.50
Old iron axles	19.50 to 20.00
Old iron rails	16.50 to 17.00
Old car wheels	13.50 to 14.00
Choice scrap R. R. No. 1 wrought	15.25 to 15.75
No. 1 yard scrap	12.00 to 12.50
Machinery scrap	13.50 to 14.00
Low Phosphorus scrap	17.50 to 18.00
Wrought iron pipe	11.00 to 11.50
No. 1 forge fire scrap	10.50 to 11.00
No. 2 forge fire scrap, ordinary	8.50 to 9.00
Wrought turnings	9.00 to 9.50
Axle turnings, heavy	10.50 to 11.00
Cast borings	8.50 to 9.00
Stove plates	11.00 to 11.50

BUFFALO.

Leading Interests Not Willing to Make Lower Pig Iron Prices.

Office of THE IRON TRADE REVIEW,
932 Ellicott Square, May 5.

Pig Iron.—The interests that are sticking to the prices scheduled below are selling very little iron, but they profess that they are unwilling to go any lower. They are the bigger producers. That iron is being sold at lower prices, there is small doubt. Perhaps 50 cents a ton off would represent the cut. For first half delivery, f. o. b. Buffalo, we quote as follows:

No. IX foundry	$16.80 to 17.30
No. 2X foundry	16.30 to 16.80
No. 2 plain	15.80 to 16.30
No. 3 foundry	15.30 to 15.80
Malleable Bessemer	16.50 to 17.00
Gray forge	15.00 to 15.50
Charcoal	21.00 to 21.50

Finished Materials.—Plans and specifications are being prepared and will be submitted in the near future by the New York Central R. R. to the grade crossing commission of the city of Buffalo for the elimination of 23 grade crossings on the New York Central's belt line here. The work will cost about $400,000.

ST. LOUIS.

Fair Business in Pig Iron—National Prosperity Association.

May 4.

Pig Iron.—Orders ranging from 500 to 1,000 tons of No. 1 and No. 2 pig iron were placed in the St. Louis market last week at prices ranging from $11.50 to $11.75 for No. 2 Birmingham. In some instances $12 was secured. Very little business was placed as low as $11.50, and while quotations seem firm at $11.75, many of the buyers feel confident that they will be able to purchase at $11.50 or lower in the near future, and are holding back good tonnages for development. Upwards of 150 tons of high silicon high sulphur iron was sold at $10.50, Birmingham. This averaged but little better than gray forge. Our quotations delivered, to which the freight rate of $3.75 has been added, follow:

No. 1 southern	$16.25 to 16.75
No. 2 southern	15.75 to 16.25
No. 3 southern	15.25 to 15.75
No. 4 southern	14.75 to 15.25

Southern basic iron is quoted at $16.75 delivered; northern basic at $18 to $18.50, and malleable at $18.

Coke.—Foundries in the St. Louis territory are using more coke, and the melt has been slightly increased. Orders are being booked for shipment over the next three and five months. One order was booked for 25 cars, 48-hour Virginia furnace coke, at $1.75 ovens. Foundry coke, 72-hour, is quoted at $2.15 ovens, for immediate shipment.

Finished Material.—No building projects were made public last week, although the new National Prosperity Association, organized for the purpose of dissipating any cloud that may be hovering over the commercial outlook during the presidential year, reports that its work is making headway, not only in St. Louis, but throughout the nation.

Old Material.—The market remains dull. Our quotations follow:

Cast iron borings, free from foreign material, net ton	$ 4.50
Steel axle turnings, net ton	8.00
Steel railroad axles, net ton	13.50 to 14.00
Iron railroad axles, net ton	15.50
Miscellaneous steel scrap, gross ton	10.25
Old car wheels, gross ton	14.00 to 14.50
No. 1 railroad cast scrap, net ton	11.00
Heavy machinery cast, net ton	12.00
Stove plate and light cast, net ton	10.00
Sheet iron, net ton, uncut	3.50
No. 1 railroad wrought, net ton	10.50 to 11.00
Railroad malleable, net ton	11.50
Heavy melting steel, net ton	10.00

BIRMINGHAM.

Low Prices Denied—New Ensley Plant Will Start Soon.

May 4.

Invitations were received by southern iron interests the past week to attend meetings at which there will be discussions of the conditions. The statements made in the north that Birmingham interests were preparing to sell a large tonnage of iron at $10 per ton, No. 2 foundry, have been laughed at and bitterly denied. The invitation went out of the office of F. A. Burr, general sales agent of the Tennessee Coal, Iron & Railroad Co., for a meeting of the southern interests in his office the first of this week. The second invitation came from E. H. Gary, in behalf of the committee of the American Iron and Steel Institute, for a dinner at the Waldorf-Astoria hotel in New York City on May 21. No definite statement is made as to the matters that will come up at either meeting.

The work on the steel plant of the Tennessee company at Ensley has progressed so far that a test has been given the rail mill, which was found satisfactory, and announcement is made that the big industry will be ready for general operation by May 18.

Preparations are being made to start up the rolling mills of the Tennessee Coal, Iron & Railroad Co. at Bessemer, near here, some orders having recently been received.

Better conditions are reported in

the cast iron pipe plants. Work has been started on additional pits in both Bessemer and North Birmingham. The prospects for an immediate resumption in all departments at the pipe plants are very bright.

BRITISH IRON MARKET.

Pig Prices Tending Downward—No American Iron.

Office of THE IRON TRADE REVIEW, Prince's Chambers, Corporation St., Birmingham, Eng., April 25.

The slight further weakness which has developed during the past week is merely what might be expected during the holiday period, the furnaces necessarily making some deposits to stock. The amount, however, has not been large, and it seems likely that the small accumulation will speedily be disposed of. There has been a fall of about 9d on the week, yesterday's quotation being 51s 3d ($12.54), with 48s 9d ($11.92) for three months, and 49s 8d ($12.16) for one month. The market has been depressed by rumors of American imports of raw material, but so far nobody has seen any pig iron from the states. The continent is still a good buyer, and is mainly responsible for the total of 90,428 tons this month, as compared with 84,193 tons last month. This is much below the figures of a year ago, but April, 1907, was a record month which had no chance of being equalled. There are now 13 fewer furnaces in the Cleveland district in operation than there were a year ago. With regard to the Midland district, business is practically in suspense. Buyers are not disposed to make offers, and the furnaces have sufficient work ahead to remove any excessive anxiety.

METAL MARKET

NEW YORK.

May 5.

The lead market has made considerable improvement during the past week, owing chiefly to more extensive buying by manufacturers, which has reduced stocks to a low level. Production is still curtailed and the price level was quick to feel the influence of the movement. Copper has been practically stationary for some time, though there is a slight improvement in consumption. Tin is weak both for domestic and foreign markets, and the antimony market is lifeless. We quote, spot delivery New York, as follows:

Lake copper, 12⅝c to 13c; electrolytic copper, 12½c to 12¾c; casting copper, 12¼c to 12½c; pig tin, 31.60c to 31.90c; pig lead, 4.10c to 4.15c; spelter, 4.60c to 4.65c; antimony (Cookson's), 8¾c to 9¼c; antimony (Hallett's), 8½c to 8¾c; antimony (ordinary brands), 8c to 8¼c.

CHICAGO.

The local metal market is quiet with tin and lead the strong elements. There is little carload business being done in copper and prices for small lots of 5,000 to 10,000 pounds range fractionally higher. We quote as follows:

Lake copper, 13½c to 13¾c; casting, 13c to 13¼c; pig tin, 34c to 34½c; spelter, 5.10c to 5.25c; pig lead, desilverized, 4.20c to 4.30c in 50-ton lots; corroding, 4.70c to 4.80c in 50-ton lots; car lots, 2½c per 100 pounds higher; sheet zinc, 7c list, f. o. b. LaSalle, in car lots of 600-pound casks; Cookson's antimony, 12½c to 13c; other grades, 12c to 12½c.

The only metal which exhibits any strength is lead. The balance of the old metal market is very dull and transactions are confined to small lots. We quote, to dealers, as follows:

Copper wire, 10½c; heavy copper, 10½c; light copper, 9½c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 5½c; No. 1 red brass borings, 8½c; No. 1 yellow brass borings, 7½c; brass clippings, 8c; tea lead, 3¼c; lead scrap, 3½c; zinc, 3¼c; tin pipe, 25c; tin foil, 22c; pewter, 17c; electrotype plates, free from wood, 4c; electrotype dross, 2¼c; stereotype plates, 4½c; stereotype dross, 3c; prime slab zinc dross, $62 per ton.

ST. LOUIS.

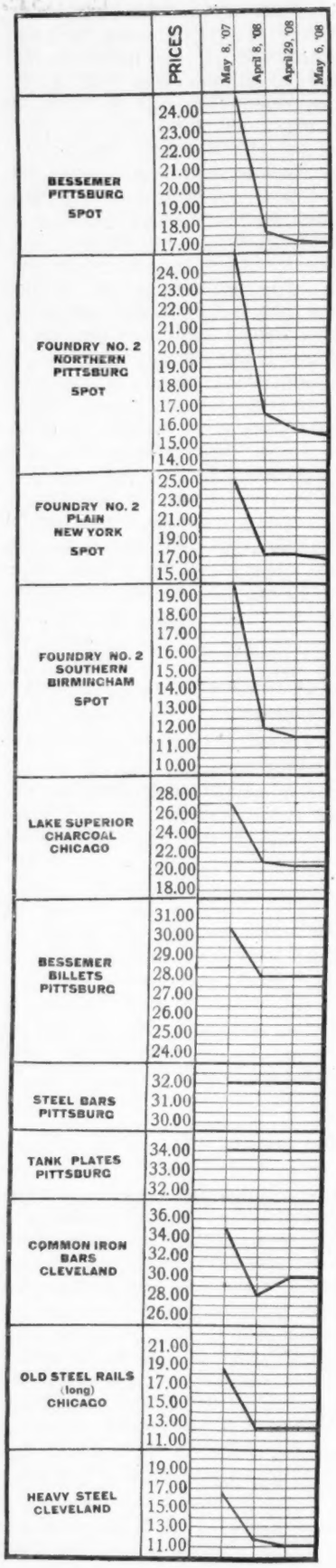
May 4.

Lead and Zinc.—Zinc attained a top price of $39 a ton in the Joplin district last week, with the base price of $36 a ton for 60 per cent zinc unchanged. Lead was in demand, and reached a price of $55.50, an advance of half a dollar. Ore producing conditions were more nearly normal at the close of the week than they have been for several months.

Heavy April rains have resulted in the necessity of several mines being abandoned, temporarily, and others are threatened with a steadily increasing volume of water, but strenuous efforts are at work to add sufficient pumping machinery to control the water, which is filtering through the ground from old surface mines.

The lead output for the first four months of the present year is more than 31 per cent less than for the same period last year, and the demand for ore grows stronger each week, though the pig lead market continues unchanged.

PRICE CHART.



DECREASE IN PIG IRON PRODUCTION

Our blast furnace statistics this month show a decrease in the production of pig iron during April. The total production of all the furnaces in the country is 1,155,100 tons, as against a production in March of 1,229,856 tons, a decrease of 74,756 tons. The production for April is divided as follows—merchant iron 353,651 tons; non-merchant iron 788,861 tons; spiegel and ferro 12,588 tons. The decrease in production is not altogether accounted for by April being a shorter month, as the average daily production in April was 38,503 tons, as against 39,672 tons in March. The number of furnaces in blast on the last day of April was 146, a decrease of eight from the corresponding time in March.

An analysis of the figures shows the decrease to be almost entirely due to diminished production of steel-making irons in the states of Pennsylvania, Ohio and Alabama. Pennsylvania shows a decrease of 64,204 tons of steel-making iron and an increase of 2,564 tons of merchant pig over March. Ohio shows a decrease in both steel-making and merchant pig, the figures being 14,969 and 6,222 tons respectively. The same is true of Alabama, the decrease being 19,414 tons and 112 tons for non-merchant and merchant iron respectively. New York, Illinois and the group of states consisting of Maryland, Wisconsin, Colorado and Indiana show a healthy increase in the production of steel-making iron, the figures being—New York, 18,253 tons; Illinois, 7,398 tons; and the Maryland group, 7,124 tons. New York and Maryland group both show a decrease of nearly 5,000 tons, however, in merchant iron production. The changes in the other states and groups of states are largely nominal, being less than 3,000 tons one way or the other, in most cases ranging in the neighborhood of 500 tons.

The percentage of active capacity in blast is low, but one state, Illinois, showing over 50 per cent in blast, the figure in this case being 54.1, as against 52.0 in March. Pennsylvania, Ohio, Alabama, Virginia, New York and the Maryland group all show decreases, while the remaining states show slight increases. The changes in the distribution of active stacks is as follows: Pennsylvania 2 less; Ohio 2 less; Alabama 4 less; Virginia 1 less; New York 1 more; Michigan 1 more. The average daily capacity in blast on the last day of April was 38,245 tons, as against 39,939 tons on the last day of March.

APRIL FURNACE REPORT.

STATES.	NO. OF STACKS. APRIL.	NO. OF STACKS. MARCH.	NO. IN BLAST ON LAST DAY OF MONTH. APRIL.	NO. IN BLAST ON LAST DAY OF MONTH. MARCH.	PERCENTAGE OF TOTAL POSSIBLE OUTPUT MADE.	AV. DAILY CAPACITY IN BLAST LAST DAY OF MONTH.	ACTUAL TONNAGE MADE. MERCHANT.	ACTUAL TONNAGE MADE. NON-MERCHANT.	TOTALS. APRIL.	TOTALS. MARCH.
Pennsylvania	155	157	59	37.4	16,079.7	100,443	385,519	485,962	547,602	
Ohio	62	24	26	39.5	7,142.4	57,706	159,132	216,838	238,029	
Alabama	45	15	19	31.3	3,360.0	76,107	18,662	94,769	114,295	
Virginia	24	8	9	33.6	2,057.6	26,230	———	26,230	24,352	
New York	24	8	7	33.3	874.4	30,490	31,773	62,263	48,856	
New Jersey	9	4	4	44.4	756.6	22,701	———	22,701	23,243	
Illinois	24	13	13	54.1	4,890.6	7,320	133,480	140,800	133,652	
Tennessee	18	7	7							
West Virginia	4	1	1	30.1	953.1	21,814	5,935	27,749	28,852	
Kentucky	7	1	1							
Maryland	4	2	2							
Wisconsin	6	1	2	42.7	1,964 9	6,842	54,360	61,202	58,797	
Colorado	6	3	3							
Indiana	1	1	1							
Georgia	2	0	0							
Texas	3	0	0							
Minnesota	1	0	0	8.9	166.5	3,998	———	3,998	781	
Michigan	2	1	0							
Missouri	1	0	0							
Spiegel—All states								6,495	5,762	
Ferro—All states								6,093	5,635	
Totals	398	146	154	———	38,245.8	353,651	788,861	1,155,100	1,229,856	

ASSOCIATION OF AMERICAN STEEL MANUFACTURERS.

The Association of American Steel Manufacturers held its annual meeting May 2, at the Lincoln hotel in Pittsburg, with representatives present from the leading steel companies comprising the membership. Among other technical matters, it was decided to continue the effort that was begun some years ago to discourage the use of numbered gages in measuring the thickness of sheets, plates, bars, etc., in favor of dimensions expressed in thousandths of an inch. The following officers were elected: President, W. A. Bostwick, metallurgical engineer, Carnegie Steel Co.; vice president, A. A. Stevenson, superintendent Standard Steel Works Co.; secretary-treasurer, Jesse J. Shuman, inspecting engineer, Jones & Laughlin Steel Co.

PERSONAL.

S. P. Ker, vice president and general sales manager of the Republic Iron & Steel Co., is spending a short vacation in Virginia.

W. F. Wagner, of New York, vice president, George L. Bishop, of Boston, auditor, and James Warren, general manager of the Washington, Pa., plant of the Jessop Steel Co., were painfully injured at Washington, Pa., May 3, when a freight engine demolished the carriage in which they were riding. None of the party was seriously hurt.

George Huggins has resigned as superintendent of the Mahoning Valley plant of the Republic Iron & Steel Co. Mr. Huggins is regarded as one of the most expert bar mill managers of the middle west, and has been with the Republic company for many years, as well as with its predecessor, the old Brown-Bonnell Co. He will be succeeded by Frank Cunningham, superintendent of the Republic's mills at Toledo, O.

OBITUARIES.

William R. Garberson, associated with Pickands, Brown & Co., at Chicago, and in charge of coke sales, died Wednesday night, April 29. His death was caused by heart trouble and came suddenly, for he had been to the office that day. Mr. Garberson became connected with Pickands, Brown & Co. in January, 1903, and came to Chicago in August of the same year. Prior to that, he had been with the American Steel & Wire Co. and had opened the New York office of Jos. T. Ryerson & Co.

William Dana Ewart, inventor of the "Link Belt" and founder of the Link Belt Engineering Co. and the Ewart Mfg. Co., since absorbed by the Link Belt company, died in Rome, Italy, last Sunday, May 3, aged 57.

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MANUFACTURING "PROSPERITY."

While it is gratifying to note genuine instances of resuming activity in various lines of manufacture, there is reason to fear that the full effect of these evidences of bettering conditions is not being secured, by reason of the discrediting of improvement reports through their unwarranted circulation earlier in the quiet period. In certain sections of the country, in fact, the practice in this regard has been of such nature as to suggest, in somewhat reversed form, the old fable of the shepherd boy and the wolves. When the return of activity has been heralded so frequently without foundation, there is always danger that real indications of its approach will not be fully appreciated.

Every section of the country is naturally eager to see a restoration of normal conditions, particularly on the part of its own leading industries, and wherever there is evidence that this is being accomplished, the fact is deserving of the widest publicity, if for no other reason than the influence it may exert on industrial conditions generally. But there is no room for doubt that, in the long run, the work of restoring confidence and of building up business toward the normal is actually hindered by the publication of reports which are either entirely without foundation in fact, or at most tell but half the truth. These fallacies are certain to be discovered and noised abroad, and their reaction is invariably disastrous.

During the past four months, THE IRON TRADE REVIEW has had occasion to investigate numerous "resumption" reports and in very many instances, of course, has found them well founded. In quite too many cases, however, the public has daily been asked to accept statements of this nature which were either partially misleading or entirely baseless. During the dull period, certain plants have followed the practice of operating alternate weeks; in one instance of this kind a daily paper "reopened" the mill regularly each fortnight, evidently expecting its readers to forget one such statement before the appearance of the next.

Citations of this character might be given without number. In all of them the motive is worthy—a desire to help in shaking off the inactivity which has marked the early months of the year, but the method adopted is harmful because it tends to mislead. If industrial depressions were transient affairs, coming and going in a fortnight or a month, publicity of this sort might accomplish something, by establishing conditions on a firm basis before its duplicity should be discovered. But dull times are not to be so quickly overcome. Nothing except orders, backed by specifications, will work their correction. Untrue or half-true reports cannot create orders; at best, they can only build up an extremely unstable variety of artificial "prosperity" which benefits no one and eventually proves an actual hindrance in the restoration of healthy and vigorous business conditions. In this connection, it is pleasing to note that during the depression beginning last October and still prevailing, though in less acute form, the position of iron and steel manufacturers has been steadfastly opposed to the policy of attempting to deceive the people. We wish we could say the same about some department stores and other interests in retail lines outside of the iron trade.

THE VALUE OF TRADE ORGANIZATION.

The present depressed condition of business is bringing to light some apathy on the part of the members in various trade organizations, which, during times of prosperity, were in flourishing condition. The reason for this lack of interest is not easily traceable except that the objects for which the associations were formed do not now appear to be as important as in the past; and, in such cases, the expense of maintaining them seems to be out of proportion to the benefits to be derived.

In considering the question of withdrawing from membership in an association or trade organization, it should be remembered that there was some incentive and good reason for the forming of the organization. United action was apparently an essential in promoting the welfare of the particular line involved. If the association was born of necessity, it should for the same reason be maintained. These associations furnish a vehicle for the concrete expression of a particular line of industry on legislative matters and other conditions requiring united action, and such expression is far superior to individual and varying opinions. No one can doubt that a vast amount of good work has been accomplished by means of organized effort.

If changing conditions make previous policies impracticable, the policies should be changed, but the association should be kept intact. In considering the question of withdrawing from an association, the manufacturer should bear in mind that each member is one of the units composing the body and that he has a responsibility, because, if he withdraws, it not

only weakens the cause, so far as he is directly concerned, but, men being imitative, his withdrawal induces others to take the same course. The longer the life of an association or organization, the more useful it becomes through the better understanding of the questions involved and the experience gained in attaining the objects for which it was formed. It is almost certain that some day an emergency will arise which will cause an imperative need for the association.

The men who give their time and money to forming these bodies are usually the strong, influential ones in their particular line; they are the successful men; their word is law in their own plants and offices; and, with trade organizations formed by the heads of concerns, there must be varying opinions of strong minds, which are sometimes difficult to harmonize. For this reason, patience and toleration are essential.

This is an age of organization, and while we are undergoing a period of trying conditions, the splendid achievements of business men's organizations should not be forgotten to carry out a policy of short-sighted economy.

OUR FOREIGN COMMERCE.

Exports of Billets and Sheet Bars Increase—Other Lines Decrease.

The latest government returns of iron and steel imports and exports cover the month of March and the full statistics are given in the accompanying tables, comparing the March figures with those for March a year ago, and comparing also the totals for the first nine months of the two fiscal years.

The total imports, covering all lines of which the weight is returned, starting with pig iron and scrap and winding up with tin plates, hoops, cotton ties, etc., compare as follows, in gross tons:

Total Iron and Steel Imports—Gross Tons.

1902	1,212,839
1903	1,178,816
1904	266,398
1905	416,409
1906	577,809
1907	662,358
Monthly average during 1907	55,197
January, 1908	28,008
February	19,054
March	15,885

Thus it will be seen that imports have been falling rapidly in the past few months, January showing but half the average rate during the last calendar year, February a decrease, and March a further decrease, so that March imports were not much more than a fourth as large as the average monthly imports last year. This is due chiefly to the decrease in pig iron imports, as is seen by the following figures:

Total imports in 1907	662,358
Pig iron	489,440
All other commodities	172,918
Monthly average	14,410
Total imports in March	15,885
Pig iron	5,711
All other commodities	10,174

Thus the imports of all iron and steel commodities outside of pig iron averaged 14,410 tons per month in 1907, and amounted to 10,174 tons in March, a decrease of less than a third. Pig iron, on the other hand, dropped from a monthly average of over 40,000 tons in 1907, to only 5,711 tons in March. The swing was due to the importation of large quantities of ordinary foundry pig iron, for consumption chiefly on the Atlantic seaboard. The imports reached a high point of 74,412 tons in December, 1906, attaining a lesser high point in April and May, 1907, when they were about 66,000 tons for each month. In the first three months of this year, the total pig iron imports have been 29,129 tons, and these are not far from normal, being chiefly ferro-manganese and spiegeleisen, which are not segregated from ordinary pig iron in the monthly statistics of the government.

The total iron and steel exports have undergone a considerable decrease this year. Recent exports compare with 1907 as follows:

All Iron and Steel Exports—Gross Tons.

Monthly average during 1907	108,544
Monthly average, first quarter 1908	84,181
March, 1908	96,437

Thus March makes a better showing than January and February, but falls 12.6 per cent behind the average in 1907. There is a decrease in nearly every line, greater in point of percentage than the decrease in the total, because one line stands out prominently with an increase—crude steel. This is due to the relatively heavy exports of sheet bars, a group of contracts made last year calling for 100,000 tons of sheet bars to be exported during the present half year, at the average rate of 16,667 tons per month. Besides these sheet bar exports, there is the normal movement of billets, blooms, slabs, etc., and the exports of all, including ingots, blooms, billets, slabs and sheet bars compare as follows:

1906	192,616
1907	79,991
Monthly average, 1907	6,666
January, 1908	5,317
February	21,744
March	23,444

Shipments on the new sheet bar contracts were a little slow in getting started, as the total exports in March were 23,444 tons, and deducting 5,317 tons, the average of exports in 1907, leaves 18,127 tons, the amount by which March exports of billets, sheet bars, etc., exceeded the average exports in 1907.

Inasmuch as exports of billets, sheet bars, etc., have shown an increase while practically all other lines have shown a decrease, it is well to deduct such figures from the totals and make comparison. The total iron and steel exports in 1907 were 1,302,525 gross tons, of which 79,991 tons were billets, sheet bars, etc., leaving 1,222,534 tons as the total of all other commodities. This is a monthly average of 101,878 gross tons. The exports of all iron and steel commodities except billets, sheet bars, etc, in March amounted to 72,993 tons, so that there has been a decline, outside of billets, sheet bars, etc., of about 28 per cent.

Exports—Gross Tons.

	March.		Nine months ending March.	
	1907.	1908.	1907.	1908.
Scrap	1,730	1,940	10,606	13,111
Pig iron	7,291	2,528	63,490	38,823
Billets, sheet bars, etc.	14,343	23,444	93,944	79,660
Wire rods	5,775	356	8.395	4,958
Rails	25,310	10,107	220,945	231,252
Structural iron and steel	11,778	13,185	90,075	107,047
Bar iron	783	507	37,604	11,494
Steel bars	3,540	5,830	27,966	53,795
Iron sheets and plates	2,736	2,761	20,000	32,642
Steel sheets and plates	9,190	4,982	71,899	47,116
Tin and terne plates	825	2,639	4,249	7,671
Hoop, band and scroll	667	181	5,194	7,784
Wire	13,576	12,252	123,820	120,873
Wire nails and spikes	4,268	3,235	29,082	30,390
Cut nails and spikes	342	582	5,352	4,326
Other nails and tacks	680	340	5,085	4,723
Pipes and fittings	9,953	11,568	94,227	138,255
Totals	112,787	96,437	911,933	933,920

Imports—Gross Tons.

	March.		Nine months ending March.	
	1907.	1908.	1907.	1908.
Scrap	502	434	13,246	16,966
Pig iron	55,692	5,711	392,381	186,773
Billets, bars, and steel n. e. s.	1,207	1,054	15,229	13,785
Wire rods	1,459	1,025	13,134	11,125
Rails	395	28	3,524	2,209
Structural	233	42	8,588	1,367
Sheets and plates	256	179	2,776	1,983
Bar iron	2,660	1,918	30,055	30,484
Tin and terne plates	7,267	5,343	45,407	42,384
Hoop, band and scroll	.....	151	4,058	437
Totals	69,671	15,885	528,398	307,513

ASSAILANT OF ROOSEVELT APPEARS IN NEW ROLE

BECOMES PROTECTOR OF DEATH TRAP AT SYRACUSE UNIVERSITY

Chancellor Day, Taking Umbrage at Editorial Published by Iron Trade Review, Demands Resignation of Dean Kent, Who Urged Fireproofing of Buildings — Official Reports Condemn the Structure in Very Strong Language

As an indirect result of the school fire at Collinwood, O., on March 4 last, serious friction has developed at Syracuse University between Dean Kent, of the College of Applied Science, and Chancellor Day, over the question of the safety of the Applied Science building.

Day, it will be recalled, has obtained considerable notoriety by calling President Roosevelt an anarchist.

In THE IRON TRADE REVIEW of March 12 was published an editorial entitled "Lessons from the Collinwood Fire." This editorial was in part as follows:

We have in mind two technical schools, one of them attached to a great university in central New York, the other one of the foremost eastern schools. Each of these colleges has features in at least one of its buildings which are similar to those of the Collinwood school. The building attached to the university is far worse. It is four stories high. The one stairway is in a hall which is enclosed in brick walls to the top of the building, forming a flue for smoke and flame. Stairs and hallways are of wood. There is the same partition 6 feet back from the door, which did the mischief at Collinwood. In addition the doors, both at the main entrance, and in the partition, OPEN INWARDLY. This is one crime that was not committed at Collinwood, newspaper reports to the contrary, notwithstanding.

But this is not the worst. The drafting room is located on the top floor, under the sloping roof. The only exit is a narrow winding stair to the main hall below. The room is lighted by windows in a monitor on the roof, 10 or 12 feet above the floor. THERE IS NOT A FIRE ESCAPE ON THE BUILDING. It is not difficult to imagine the fate of the men trapped on the upper floor by a fire below them. They would be unable to use the stairs, and could not reach the windows—could not even make their position known to persons outside. * * * In a fire of any size, probably not one could escape.

The building referred to in the above paragraph was the College of Applied Science at Syracuse University. A copy of the editorial was forwarded to Dean Kent, together with a letter strongly urging him to take steps to have the danger removed or modified. The matter was referred to Chancellor Day, who in turn referred it to the superintendent of buildings and grounds. The latter ridiculed the idea of danger in the building and on his advice the chancellor refused to take any steps whatever to remedy the dangerous conditions existing.

Dangerous Conditions.

Dean Kent immediately went over the chancellor's head and appealed to the public authorities for an investigation. The board of public safety sent an inspector to the building and we quote from his report as follows:

In accordance with your directions we have made a thorough examination of the buildings erected upon the Syracuse University campus and find that conditions as represented in letters and periodicals furnished to this office are in no wise exaggerated, but worse than represented. We find that the doors of all the buildings open in and should be changed. * * *

The building [College of Applied Science—Editor] is of mill construction; the front entrance has two narrow doors and upon the landing of the stairs is placed a wood partition with doors which should be removed. All stairs throughout the building are built of wood and finished in oil and varnish and are continuous from basement to upper floor with a well hole forming an air shaft up through the building in case of fire. The stairs should be of iron or other noncombustible material unless other means of escape from the building are provided. In my opinion, it is necessary that a fire escape should be erected upon the outside of the building and upon the east and west ends of the same.

The stairs in the basement are enclosed with wood and are used as a store room, which is filled with packages of varnish, paint, turpentine, paper and all manner of combustible substances, and just outside the door stand two 50-gallon cans of petroleum on a platform under the stairs. * * *

Upon the fifth floor or attic story is a room about 50 x 150 feet used as a drafting room occupied by 90 to 100 persons with tables filling the entire room. This room is enclosed with a wood partition on four sides about 12 feet high and is lighted by windows in a cupola upon the roof 12 or 14 feet above the floor. The partition around this room is about 6 feet away from the outside walls of the building and under the slope of the roof, thereby forming a convenient receptacle for papers, books and other combustible material all around under this roof.

There is only one exit from this room it being in the center and on the south side leading by stairs to the main hall on the fourth floor. With this exit cut off in case of fire, no possible means of escape is provided. The material used in the room is of southern pine and oiled and varnished, and is highly inflammable, and the equipment of the room is the same.

I can see no safe or feasible way for relief and would advise the abandonment of this room under these conditions.

Acting upon this report, the board of public safety notified the university that every change recommended in the inspector's report, which covered not only the Applied Science building, but other buildings of the university, which were found to be in as bad condition, or worse, must be carried out. The reply to this was a vicious attack on the inspector by Chancellor Day, in the daily papers, in which he accused him of untruthfulness, prejudice and other high offences.

Denounced as Fire Trap.

Meanwhile, through the instrumentality of THE IRON TRADE REVIEW, the Associated Factory Mutual Fire Insurance Companies became interested in the case and an inspector of that association was sent from Buffalo to examine the building. The report of this inspector covered practically the same ground as that of the city inspector as regards building construction, arrangement of exits, etc. In concluding his report, the insurance inspector writes as follows:

If access to the stairway could not be gained from the fourth floor on account of smoke or flames coming up from below, the only means of egress from the fifth floor would be through small windows in the towers, which are 55 feet from the grade level. * * * These windows are only 30 inches square and the hinges from which the windows swing are at the bottom and the windows swing inward. The window is 5 feet 4 inches from the floor line and you can readily see how much value they would be. I have this to say: The top floor of that school is a fire trap and I never saw a worse one. I am inclined to believe that the older buildings are just as bad.

The reply to this report was a violent denunciation of the inspector by Chancellor Day, who called the re-

port exaggerated and misleading and ridiculed the recommendations made for rendering the building safe. No evidence was provided, however, to show wherein the reports were in error. The fact that Syracuse University never had a fatal fire on its campus is given, by inference, as a good reason why there is no need of taking precautions against a fire in the future. This also held good in Collinwood, up to March 4, last. The chancellor also complains that no word of alarm was spoken regarding the building until after the Collinwood fire, when, as a matter of fact, Dean Kent requested fire escapes be placed on the building over three years ago.

As a result of Dean Kent's going over the chancellor's head in an effort to render the building safe, his resignation has been demanded. This he has refused to give, insisting that charges be preferred against him and that he be given a chance to justify his acts in connection with the university. As there is no question as to Dean Kent's ability as an engineer, instructor or administrator, the question at issue between him and the chancellor seems to rest entirely on whether his actions in behalf of the safety of the students in his charge was justified by the conditions existing in the building. The sentiment among the students and the alumni of the university is entirely in the dean's favor, and the outcome of the contest is awaited with considerable interest.

Low Prices and Buying.—Matthew Addy & Co.'s pig iron report for April 27, says: It has been very clearly demonstrated in the last few weeks that low prices do not stimulate consumption. In some directions furnaces have been willing to make extremely low figures, but these low prices apparently have not resulted in the sale of any iron for future shipments, nor have they tempted speculators into the market. To the best of our knowledge and belief the only iron that has been sold has been sold for nearby delivery and to cover actual needs. If prices had been ruling higher the same quantity of iron would have been sold, so the sacrifices that various furnace interests have been willing to make in order to tempt buyers into the market have been without any real effect. Just as much iron would have been sold if prices had been on a profitable, instead of a losing, basis.

PROGRAM OF SUPPLY AND MACHINERY DEALERS' CONVENTION.

The official program for the joint meeting at Richmond, Va., next week, of the Southern Supply and Machinery Dealers' Association, the National Supply and Machinery Dealers' Association and the American Supply and Machinery Manufacturers' Association has been announced. The headquarters of the three associations will be at the Hotel Jefferson, which reports unusually heavy reservations, indicating a record attendance.

The morning of Wednesday, May 13, will be given over to separate executive sessions of the three bodies for the usual convention business. In the afternoon a joint open session will be addressed by the three presidents, C. H. Briggs of the Southern, George Puchta of the National, and M. W. Mix of the American. Secretary of War Taft is scheduled to speak on "The Value of Trade Organization," provided he returns from the isthmus in time. A smoker and vaudeville performance in the Jefferson Auditorium are arranged for the evening.

Thursday morning will be devoted to a joint executive session, for which the following addresses are arranged: "Resale Prices," F. A. Hall, Yale & Towne Mfg. Co., New York; "Salesmanship," W. E. Gerow, Atlantic Supply Co., Jacksonville, Fla.; "Plain Talk to Jobbers," D. K. Swartwout, Ohio Blower Co., Cleveland; "Advantages of Co-operation in the Supply and Machinery Business," W. M. Pattison, W. M. Pattison Supply Co., Cleveland. During the afternoon, the American association will hold an executive session, while another executive meeting will be participated in by machinery members of the other two organizations and those supply members engaged in the machinery business. At the banquet in the evening, addresses will be made by Charles A. Moore, president Manning, Maxwell & Moore, New York, on "Commercial Fraternity;" by Robert Wuest, commissioner of the National Metal Trades Association, Cincinnati, on "Benefits Derived from Trade Organizations;" and by Hon. John Garland Pollard, of Richmond, on "The Ladies."

Separate executive sessions will be held on Friday morning and a joint executive session in the afternoon will conclude the meeting. Trolley rides are provided for the ladies of the convention on Thursday afternoon to points of interest about the city and on Friday afternoon to the Lakeside Country Club, where luncheon will be served.

Monthly Meeting of A. S. M. E.—The next meeting of the American Society of Mechanical Engineers will be held Tuesday evening, May 12, in the Engineering Societies building, New York. The paper will be by Henry Souther, of the Henry Souther Engineering Corporation, Hartford, Conn., on the subject of "Clutches," with special reference to the types used on automobiles. Their development will be shown by lantern slides. The meeting will be important not only to those directly interested in automobile construction but to all who have to do with the use of clutches for machine tool work, power transmission, hoisting machinery, textile and other classes of machinery. The meeting will afford an opportunity for the full discussion of their design and use. The discussion will be continued at the semi-annual meeting of the society at Detroit, June 23-26.

Summer Courses at Ohio State University.—Summer courses are being offered at Ohio State University, at Columbus, for artisans, draftsmen, electricians, mechanics, engineering salesmen, stationary engineers and firemen. The term extends from June 22 to Aug. 14, courses in electrical and steam engineering and mechanical drawing being from June 22 to July 18, and in mechanical drawing and shop work from July 20 to Aug. 14. The total fees are $6. Courses are also offered in chemistry, English, industrial arts, manual training, mathematics and physics, extending six to eight weeks. Further information can be obtained by addressing Prof. W. T. Magruder, at the university.

Changes in Executive Staff.—At a meeting of the directors of the New York Car Wheel Co., April 30, the resignation of W. G. Smith, Dr. Edwin Lodge and Herbert E. Boynton were accepted and Frederick L. Colby, Oscar Shimmel and Herbert E. Payne were elected to serve in their stead. Changes in the official staff were made as follows:

Bernard Ginsburg, vice president, succeeding W. G. Smith, resigned; and Edward W. Pendleton, secretary, succeeding J. A. Venable, resigned. The officers now are: Solomon Ginsburg, president; Bernard Ginsburg, vice president; Edward W. Pendleton, secretary; James A. Venable, treasurer and general manager.

CUBAN ORE MINES

Being Developed by Pennsylvania Steel Co.—The Annual Report.

The annual report of the Pennsylvania Steel Co. of New Jersey, submitted to the stockholders May 2, shows a decrease in net earnings for 1907 of $1,301,664, and in surplus after dividends of $739,143. In the annual report for 1906, the statement was made that a decrease in net profits might be expected in 1907, because of the increased cost of labor, supplies and raw material.

The following is the report of the board of directors through President E. C. Felton:

Mining Companies.—The coal properties in Indiana county, Pa., belonging to your subsidiary companies, the Penn-Mary Coal Co., and the Possum Glory Coal & Coke Co., produced in 1907, 428,000 tons of coal, compared with 259,000 tons in 1906. These properties were further developed during the year by the opening of a new mine and the construction of a steel coal tipple which was put in operation about the middle of the year. A considerable number of miners' houses were also added during the year.

The iron ore properties near Santiago, Cuba, belonging to your subsidiary company, the Spanish-American Iron Co., which have been producing for many years, were operated to their full capacity during 1907. They mined 500,000 tons of iron ore during the year and by explorations added more than this amount to their reserves.

In last year's report, reference was made to the discovery on the north coast of Cuba by the Spanish-American Iron Co. of large deposits of iron ore, the development of one of which near Mayari was then under consideration. This new deposit is of vast extent and will supply all the needs of your manufacturing companies for many years to come. Its development was begun in June, 1907, and is being pushed as rapidly as circumstances will permit.

Manufacturing Companies.—These are the Pennsylvania Steel Co. of Pennsylvania, with works at Steelton and Lebanon, Pa., and Maryland Steel Co. with works at Sparrow's Point, Md. Their production of pig iron in 1907 was 843,000 tons, compared with 809,000 tons in 1906. Of steel ingots, they made 932,000 tons in 1907, compared with 977,000 tons in 1906.

At the Steelton works of the Pennsylvania Steel Co., the new open-hearth plant, consisting of five 75-ton furnaces, which has been under construction for the last two years, was completed, the first steel having been made in May and the entire plant having been put in operation in August. This new plant has operated very satisfactorily, and has shown a considerable saving in costs over those obtained in the older open-hearth plants at Steelton.

During the year No. 3 blast furnace of the Steelton plant was remodeled and largely rebuilt. The results obtained from the new furnace have been satisfactory in the direction of both increased output and decreased costs.

All Companies.—In the annual report for 1906, the statement was made that a decrease in net profits might be expected in 1907 because of the increased costs of labor, supplies and raw materials. The almost entire suspension of manufacturing operations during the last two months of 1907, brought about by the October panic, has caused a still further reduction in profits.

The combined income accounts of all companies for the year ending Dec. 31, 1907, are as follows:

Net earnings from operation	$4,161,319.08
Rents, income from investment and interest	314,395.28
Income from all sources	$4,475,714.36
Less interest on bonded debt	827,297.47
Net income	$3,648,416.89
Less charges to general and special Depreciation of plants and equipment	1,267,327.27
Net profits	$2,381,089.62
Less dividends of operating companies	1,140,000.00
Balance of profits	$1,241,089.62

Out of the balance of profits of all the companies remaining after deducting interest charges, charges to general and special depreciation and dividends paid, your subsidiary operating companies have transferred $755,472.46 to their reserves for future plant improvements. They expended during 1907 $1,529,876.73 for additions and improvements to plants, exclusive of the sums spent by the Spanish-American Iron Co. on its new developments in Cuba. This entire amount was charged against the previously accumulated account for reserves for plant improvements.

The completion of the coke oven plant and the new open-hearth plant of the Steelton works of the Pennsylvania Steel Co. were the principal items on which these expenditures were made.

Balance sheet of your company and profit and loss account at the close of business on April 30, are as follows:

PENNSYLVANIA STEEL CO. (OF NEW JERSEY).

Balance Sheet, May 1, 1908.

ASSETS.

Cash	$ 41,145.15
Loans to operating companies	2,440,810.61
Stocks and bonds	25,380,516.09
	$27,862,471.85

LIABILITIES.

Capital stock—preferred	$16,500,000.00
Capital stock—common	10,750,000.00
Profit and loss	612,471.85
	$27,862,471.85

Profit and Loss Account May 1, 1907 to April 30, 1908.

Expenses	$ 35,499.58
Net earnings	1,229,877.38
	$1,265,376.96
Dividends from operating companies and miscellaneous interest received	$1,265,376.96
Dividends 7 per cent preferred	$1,155,000.00
Balance	612,471.85
	$1,767,471.85
Balance May 1, 1907	$ 537,594.47
Net earnings brought down	1,229,877.38
	$1,767,471.85

Dividends amounting to 7 per cent have been paid during the year on your preferred stock. No dividend has been paid on your common stock.

PITTSBURG FOUNDRYMEN

Are Anxious to Entertain the American Association.

"Pittsburg in 1910 or 1911" was the slogan adopted by the Pittsburg Foundrymen's Association at its regular monthly meeting, May 4, representing the effort that is to be made to bring the annual convention of the American Foundrymen's Association to that city.

Preliminary plans were laid at the meeting for pushing Pittsburg's claims before the foundrymen who will assemble in convention at Toronto in June. It was decided that the Pittsburg foundrymen who will be in attendance at the Toronto meeting should constitute themselves as members of a committee to sound the sentiment regarding the selecting of Pittsburg as the gathering point in 1910, and if conditions were favorable, to exert every effort in behalf of their city, if it is ascertained that prospects for 1910 were not promising, all energies would then be concentrated upon landing the convention for 1911.

The meeting of the Pittsburg foundrymen was given over largely to ante-convention talk, Secretary Richard Moldenke, of the American Foundrymen's Association, and President E. H. Mumford, of the Foundry Supply Association, both outlining the plans that are being made for the instruction and entertainment of the visiting foundrymen at Toronto. Mr. Mumford concluded his remarks with the presentation of a splendid paper on "The Foundry Convention Idea," in which he outlined in convincing style the advantages accruing from such exchange of ideas. The paper of the evening on "Core Binders" was read by E. D. Frohman, of the S. Obermayer Co., and an interesting discussion followed.

Another matter of interest at the meeting was the announcement by President Field of the adoption of plans for a vigorous campaign to raise Pittsburg's portion of the fund being collected by the American Foundrymen's Association for original research work.

The shareholders of the Union Steel Screw Co., Cleveland, O., ratified at a meeting April 30, the proposal providing for absorption by the National Screw & Tack Co., also of that city. The officers of the National Screw & Tack Co. will remain as before. President, W. D. B. Alexander; vice president, Dallas Elliott; treasurer, David Auld Jr.; and secretary, C. W. Brainard.

The Standard Steel Works, Lewistown, Pa., has shipped 2,648 locomotive tires to the Japanese government. This shipment is said to constitute the largest single order exported.

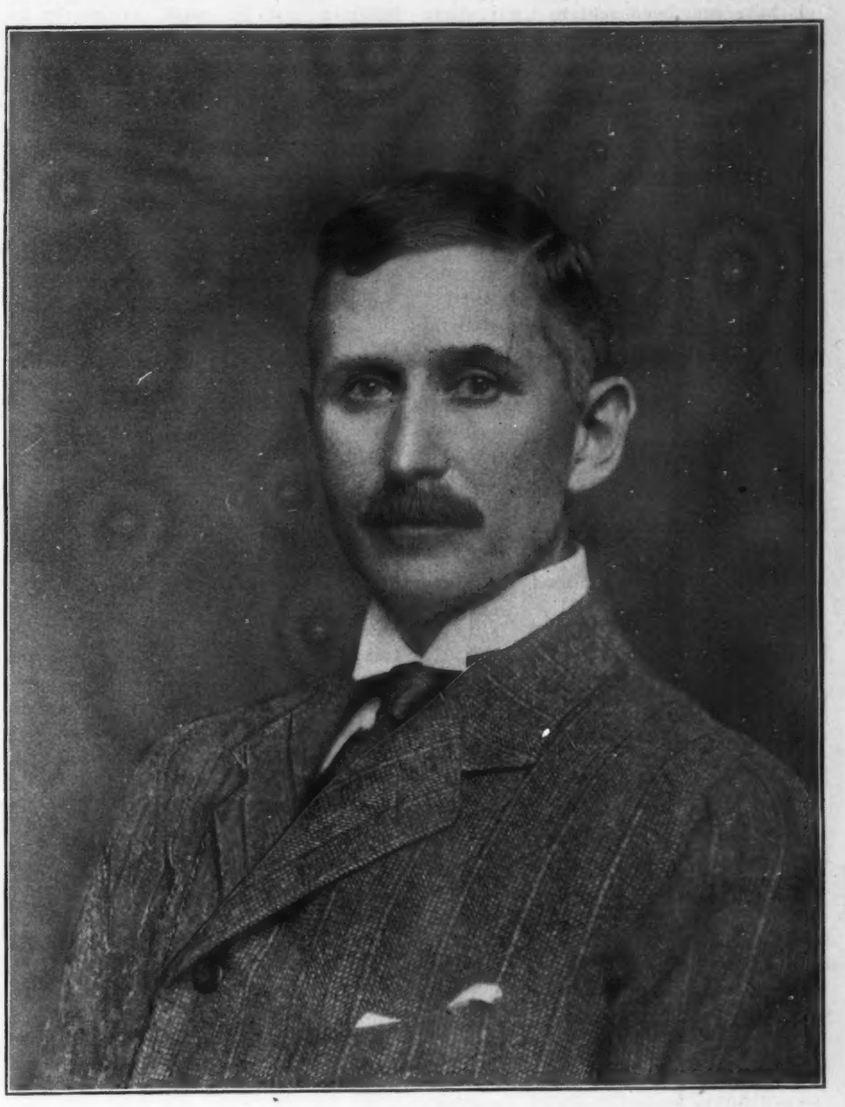
JOHN A. TOPPING*

John A. Topping, chairman of the Republic Iron & Steel Co., and one of the directors of the American Iron and Steel Institute, is a native of Ohio, born at St. Clairsville in 1860. His entire business career has been connected with the iron and steel industry, to which, it may be said, he came naturally, inasmuch as his maternal great-grandfather, James Tallman, who was a soldier in the Revolution with Washington at Valley Forge, was the owner and operator of a small forge and charcoal furnace in Hampshire County, Va. For his military services, Mr. Tallman was given a grant of land in Ohio and his descendants established the Aetna Iron & Nail Works, at Bridgeport, Belmont County, in 1872.

With these works Mr. Topping became connected in 1877, after having served a few months as bank clerk, and here he remained for 23 years until the consolidation movement of 1900. During this time, he was enabled to secure experience of practical value in all departments of iron manufacture. When the American Sheet Steel Co. was organized in the spring of 1900, Mr. Topping was chosen first vice president and to him fell the burden of putting the company in "going" condition, as the president did not take active charge until a few months after its formation. This position Mr. Topping held until the spring of 1903, when, owing to ill health, he resigned in order to take a trip abroad and rest, but on his return from Europe he took up the work in the fall of 1903 and the spring of 1904 of reorganizing the LaBelle Iron Works, at Wheeling, and was elected president. In connection with former business associates and friends, he reorganized the LaBelle concern both financially and otherwise. This work was carried to a successful completion, notwithstanding the financial depression of 1904.

In July, 1904, Mr. Topping was offered the opportunity of returning to the United States Steel Corporation, as president of the American Sheet Steel Co. and the American Tin Plate Co., some time previously consolidated as the American Sheet & Tin Plate Co. This position he assumed and held until 1906, when he was induced to associate himself with certain capitalists who had about that time acquired control of the Republic Iron & Steel Co. and the Tennessee Coal, Iron & Railroad Co. The work of reorganizing these concerns was placed in his charge and he was elected president of the Republic and chairman of the Tennessee company. In the latter connection he carried on the stupendous task of planning and building the great mills at Ensley, Ala. During the past year in order to carry out the work of reorganization more completely and to broaden its organization, the Republic by-laws were changed so as to provide for both a president and chairman and Mr. Topping was elected to the latter position, though continuing as the executive head of this concern.

Mr. Topping has been an active figure throughout the winter in the co-operation and conciliation movement adopted by the leading interests to guide the industry through the current period of depression and in the several meetings which have given rise to the American Iron & Steel Institute. Although still a comparatively young man as steel presidents go, he has had a connection of more than 30 years with the industry and is a practical operating executive, entering into every detail of the Republic's manufacturing activities, as well as a man of wide experience in the financial problems of the trade.



JOHN A. TOPPING,
Director of the American Iron and Steel Institute.

*Third of a series of brief biographical sketches of officers and directors of the American Iron & Steel Institute. The first of the series was Elbert H. Gary, April 16, and the second was Willis L. King, April 23.

FOREIGN ORDERS

Received for Milwaukee Shovels—Pump Company Busy.

Milwaukee, May 2.—The Bucyrus Steam Shovel Co., Milwaukee, has just shipped four 40-ton shovels to be used in railway construction in China and the Rio Tinto Copper Mining Co. of Spain has recently given the company an order for four of its largest shovels. Four 45-ton shovels have just been sent to Chili where they will be used in railway construction. The company has also made a recent shipment to Vienna, Austria.

The Fred M. Prescott Steam Pump Co., Milwaukee, is working night and day with a full force of men, a substantial increase of large orders being the cause.

The Dutcher Co., manufacturer of machinery and engines, 674 Kinnicninnic avenue, Milwaukee, has filed a voluntary assignment in the federal circuit court. The company is one of the oldest steel casting firms in Milwaukee and has some of the largest foundries in the city. Strained financial conditions are given as the cause of the recent difficulty. The liabilities of the company are placed at $100,000 with assets of $150,000. E. J. Tapping, of the firm of Tapping & Riedeburg, has been appointed assignee with a bond of $150,000. A meeting of the creditors will soon be held to determine the future of the company.

At the annual meeting of the Northern Chief Iron Co. at Wausau, Wis., the following officers were elected: President, D. L. Plummer; vice president, Thomas Bardeen; secretary, W. C. Silverthorn; treasurer, M. A. Huntley. The company controls mines at Superior, Windsor, West Cary and Caledonia and at the present time is in the best of financial condition.

The Western Iron Works at Manitowoc, Wis., has been dissolved. Edward J. Hoffman has retired from the firm and George Grimm will carry on the industry. The company is engaged in the manufacture of gray iron castings.

The Marinette Iron Mfg. Co. of Marinette, Wis., has made an assignment to N. Klauk, a stockholder, who will have charge of the plant until a settlement is made. Stringency of the money market is given as the cause of the failure.

The gasoline industry is to be developed on a large scale by the Lawton foundry of De Pere, Wis. Plans are under way for the formation of a new company to be known as the Lausen-Lawton Co., and gasoline engines from 4 to 18 horsepower will be manufactured.

Awarded Large Contract.—The General Fire Proofing Co., Youngstown, O., has been awarded the contract to furnish the steel for the structural work and the reinforced work on the proposed $650,000 car barns to be erected by the New York City Railway Co., in New York City. The building will be made as nearly as possible absolutely fireproof. The first floor will be built of structural steel fireproofed with stone concrete, and above the first floor the building will be reinforced concrete. The window casings, doors, furnishings, etc., will be steel fabricated, including steel lockers for motormen, conductors, etc. The structure will be 600 x 1,000 feet, four stories high. Cars are to be stored in the first and second floors, and the other two floors will be devoted to workshops and offices.

Testing Society Meeting.—The annual meeting of the American Society for Testing Materials will be held at the Hotel Traymore, Atlantic City, N. J., on Tuesday to Saturday, inclusive, June 23-27, 1908. The congestion of the program in past years, necessitating parallel sessions, has led this year to the extension of the time of the meeting from three to five days. By this arrangement it is hoped that the necessity of holding sessions concurrently will be avoided, and that provision may be made for periods of recreation and special social features.

New Coke Plant.—A new and modern coke plant of 500 or more beehive ovens will be erected by the Bessemer Coke Co., Pittsburg, upon an extensive tract of over 1,000 acres of coking coal land in Washington county, Pa., at the head of Patterson run. The land was recently bought from J. V. Thompson and it adjoins the coal properties of the Pittsburg-Buffalo Co. It is 10 miles distant from the Millsboro plant of the Bessemer company and when sufficient railroad facilities have been extended to the site, it is expected that the development work will be pushed.

The schedule of debt and assets in the case of the Sheffield Rolling Mill Co., bankrupt, was filed in the United States court at Huntsville, Ala., April 18. The liabilities are placed at $175,000, and the assets at $226,000, including buildings, lands, etc. About a month ago the company was placed in involuntary bankruptcy.

DEATH OF ABRAM REESE.

Most of the active business life of Abram Reese, whose death on April 24, at the age of 79, was briefly noted last week, had been given to iron and steel and associated enterprises. He was born in Wales, and came with his parents to this country in childhood, settling at Pittsburg. As a boy he worked in the rolling mills at Pittsburg, and was the first labor boss at the Cambria Iron Works, Johnstown, Pa., when this mill was being built and managed by his brother, Jacob. He puddled the first heat in this works. Later he was manager of the Ft. Pitt or the Reese & Graff mill, as the works were familiarly known in Pittsburg, and of which his brother Jacob was part proprietor. This mill was operated during the civil war by the United States government in making gun boat plates. His other connections at various times in his life, were manager of the Excelsior Iron Works, Pittsburg, and superintendent of the Vulcan Iron Works, St. Louis. While in this latter capacity, in June, 1871, Mr. Reese rolled the first steel rail west of the Mississippi river. In later years, Mr. Reese equipped and started a mill for rerolling old rails at Louisville, Ky. He had other business interests, and at one time was manager of the Pretolite Oil Refinery, Pittsburg. He gave his attention to coal and mining properties, and superintended some of the earliest shipments of iron ore to Pittsburg from the lake region. As an inventor, Mr. Reese had a memorable record. When a young man, he devised a bolt machine which shaped head and spike in one operation, and this principle is preserved today in the present bolt machine equipment. A machine for rolling shaped metal with one operation was perfected by him which is now successfully used for the manufacture of probably 50 specialties. Among his many other notable achievements were the perfecting of the universal mill, gas conduit and machine for rerolling old rails. A widow, four sons and one daughter survive. Of the sons, Harry W. is manager of the spiral department of the Pittsburg Spring & Steel Co.; Arthur B. is with the Carnegie interests, and Stanley C., of the mechanical engineering department of the Jones & Laughlin Steel Co.; Mr. Reese's brothers, Jacob R. Reese, who added materially to the improvement of the basic Bessemer and basic open-hearth steelmaking process, and Isaac Reese, inventor of the Reese silica brick, both died within the past year.

LABOR DISPUTES.

Hamilton Molders and Winnipeg Machinists Asked to Accept Reduction.

Toronto, Canada, May 2.—The Canadian Northern Ontario Railway Co. has decided upon the construction of machine shops on its property on Eastern avenue, Toronto, and the plans are now in course of preparation with a view to commencing work in about a month. The shops will employ 100 to 150 men at the outset.

The stove manufacturers of Hamilton, Ont., who recently resumed active operations, are endeavoring to effect a reduction in the molders' wages. The Stove Molders' Union consented, as a condition of the reopening of the shops, to have an investigation by the international officials of the union, to ascertain whether or not wages are higher in Hamilton than at other places in Canada, against which the Hamilton plants compete. In accordance with this arrangement M. J. Keough and J. H. Burnett are conferring with the employers and the men, the latter having agreed to accept a lower scale of wages in case the employers prove their contention that wages are higher in Hamilton than at competing localities.

The dispute between the Canadian Pacific and Canadian Northern Railways and the men engaged in the mechanical departments in the west is in a fair way of settlement. Conferences have been held between the Canadian Northern mechanics and the officials and the settlement in their case will probably be on the lines of the finding of board of conciliation investigating the Canadian Pacific dispute.

Arrangements for the American Foundrymen's Association convention and exhibition, to be held here June 8-12, are progressing satisfactorily. Secretary H. M. Lane is receiving applications for space from many points of the United States and already some 30,000 square feet of space out of 35,000 available in Machinery Hall, and 20,000 square feet out of 60,000 in the Process building, have been taken up.

The output of the Dominion Iron & Steel Co. for the first three months of the year shows a considerable increase over the corresponding months of 1907. It comprises coke, 116,500 tons; pig iron, 79,045 tons; steel ingots, 73,764 tons; blooms and billets, 74,967; as against coke, 91,350 tons; pig iron, 50,167 tons; steel ingots, 54,327 tons, and blooms and billets, 64,664 tons for January-March, 1907. The company is working strictly on orders in hand.

Osler Wade has been appointed permanent liquidator of the Clinton Thresher Co., Clinton, Ont., with instructions to go into the company's affairs and investigate the actions of the directors. The assets are $85,734 and the liabilities $86,607.

The Toronto-Belleville rolling mills at Belleville, Ont., which have been closed down all winter, will reopen next week.

Equipment Company Organized.—The United States Equipment Co. has been incorporated under New Jersey laws with a capitalization of $250,000. Its offices are at 11 Pine street, New York City, and the officers are Herbert F. Reagan, president, and John Everett, secretary and treasurer. Arthur F. MacArthur and John R. MacArthur, of the MacArthur Bros. Co., at the same address, are also incorporators. The new company will make a business of handling equipment for contractors, railway superintendents, etc., on a rental basis; will buy and sell second hand equipment of this kind, and will probably act as selling agent for manufacturers of this class of products. It has taken over all the equipment owned by the MacArthur Bros. Co., including the large repair shop at McCook, Ill., which will be the plant headquarters. This equipment represents an investment of about $1,250,000. It is understood that in the near future the new company will be in the market for considerable additional equipment. It will lease to the MacArthur Bros. the equipment required for the extensive contracts of that interest, these including the construction of the large ship block at Buffalo.

Will Keep Busy.—The Chester, Pa., plant of the American Steel Foundries has received a contract to make all the parts for 76 locomotives, including the manufacture of frames, wheels, driving rods, and other parts. Of these locomotives 56 will be made for the American Locomotive Co., and 20 for the Canadian company. This contract will keep the establishment going well into the summer.

The convention of the Wisconsin State Association of Stationary Engineers will be held at Milwaukee on June 19, 20 and 21.

The annual meeting of the stockholders of the Pennsylvania Steel Co. will be held May 11, at Camden, N. J.

CINCINNATI NEWS NOTES.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., May. 4.

The machine tool business shows no material change. The shops are mostly running on short time with reduced forces. Correspondence in some instances indicates a more encouraged tone for the future. There has been shopping this week from buyers and a few orders were placed. We learn of a nice order for five shapers taken by one manufacturer. The shops are still working on new devices and new descriptive circulars will be out shortly. On the whole, however, the trade is quiet.

Foundries are running light, which is to be expected under the reduction of operation in machinery building. The new form of contract for purchasing pig iron is being submitted to furnace interests for opinion and advice by selling agents, but so far as can be learned no transactions have been made under the new form and the test as to whether furnaces will accept it or reject it has not yet been made.

It is reported that Henry Weber and associates, who made the bid of $10,000 for the plant of the Weber Foundry Co. at the auction sale of the plant on April 15, are now said to be negotiating for a modern foundry located in this city.

The Edwards Mfg. Co. has added to its line of metal goods the manufacture of metal boats. Machinery has been installed for this branch of the business and a line of sizes of metal row boats is to be built.

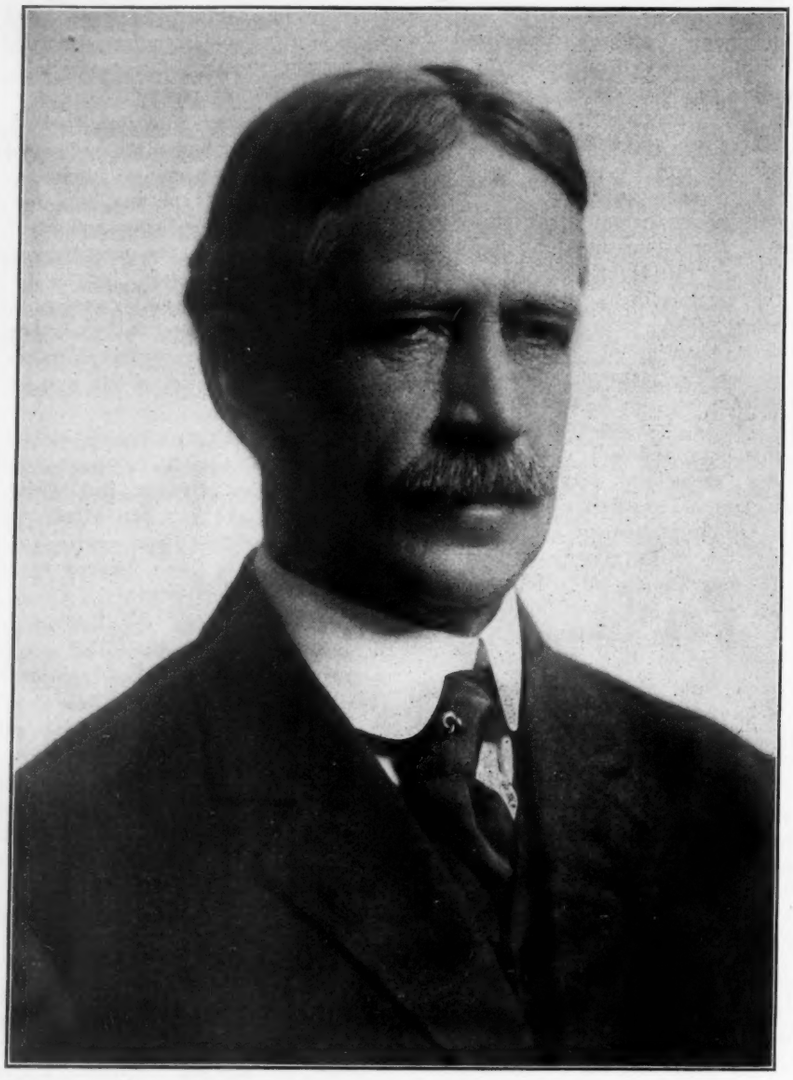
The regular monthly meeting of the Cincinnati Metal Trades Association was held at the Business Men's Club on April 29. It was reported that there has been improvement in the metal working lines recently and that about 60 per cent of the operatives in the shops are employed.

It is said that the committee appointed to select candidates for the presidency of the Iron Buyers' Association to succeed William Fetzer have selected the names to be submitted to the association for vote.

The fourth annual meeting and dinner of the Receivers' and Shippers' Association was held at the Business Men's Club on Thursday evening, April 30. The affairs of the association are in flourishing condition. The iron and machinery interests will be represented in the new board of directors by E. H. Hargrave, of the Cincinnati Tool Co., and C. R. Houston, of the Houston, Stanwood & Gamble Co.

NEW OFFICERS OF THE NATIONAL METAL TRADES ASSOCIATION

The new president of the National Metal Trades Association is an engineer as well as the chief executive of the Sullivan Machinery Co. of Chicago. Born at Lexington, Mass., in 1855, he was reared in the east and received his school and college training there. He was graduated as a civil engineer from Massachusetts Institute of Technology in 1876. Business took him out into the west almost at once and for two years following he was located in the local freight office and the office of the division superintendent of the Chicago, Burlington & Quincy railroad at Burlington, Ia. During the next three years, Mr. Copeland was engaged as mining engineer and assistant superintendent of the Whitebreast Fuel Co. of Ottumwa, Ia., which position he left to become president of the Diamond Prospecting Co. of Chicago. This concern was engaged in the sale and operation of diamond core drills and with the Sullivan Machine Co. was consolidated into the Sullivan Machinery Co. in 1892. Since the formation of this latter company, Mr. Copeland has filled his present capacity as president. He has long been active in the National Metal Trades Association, of which he was elected first vice president at the Boston convention of March, 1907, and president a year later.



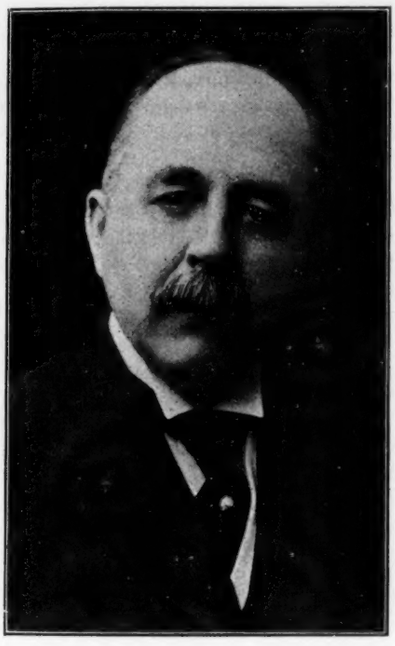
F. K. Copeland,
President, N. M. T. A.

At the recent meeting of the National Metal Trades Association, in New York, four new members of the administrative council were elected: H. W. Hoyt, Great Lakes Engineering Works, Detroit; W. A. Layman, Wagner Electric Mfg. Co., St. Louis; E. P. Robinson, Atlantic Works, East Boston, Mass., and George Mesta, Mesta Machine Co., Pittsburg.

H. W. Hoyt, of the Great Lakes Engineering Works, Detroit, was born in Wisconsin and is an alumnus of the University of Wisconsin. At present he is president of the alumni association of his alma mater. He learned the printer's trade and entered newspaper work, first at Madison, Wis., going shortly after to Nebraska as half owner of a country journal. After four years of this experience, he returned to Madison and purchased a third interest in the Democrat Printing Co. For six years, he was the principal editor of the *Daily and Weekly Democrat.* During that period, the company largely increased its plant, printing besides its own newspapers hundreds of country papers, and finally becoming state printer, a business which has been retained continuously throughout all political administrations. Fearing a serious disturbance of health under the exacting duties of the management of a morning newspaper, he sold his interest and moved to Chicago, spending four years in a profitable hotel business and then purchasing with Philetus W. Gates, in 1887, the Gates Iron Works of Chicago, builder of rock and ore crushing, mining and cement machinery. From a small plant, this became the largest of its class in the United States, with active branches in London, England, South Africa and Australia. Of this company Mr. Hoyt was secretary and general manager until 1901, when the business was sold to the Allis-Chalmers Co., of which he was second vice president in charge of the sales department for three years. He then resigned and took his first long vacation. He was active in the formation and organization of the Great Lakes Engineering Works, in 1902, and has been a director from the first. In 1907 he moved to Detroit and was made vice president of this company. Mr. Hoyt has, for many years, been active in

business men's organizations, especially the National Founders' Association, of which he was president for a year, and the National Metal Trades Association.

Waldo Arnold Layman was born in 1870 at Smithton, Mo. He moved with his family at an early age to Indiana, where he was educated in the public schools of Terre Haute, graduating from the high school in 1887. He took the full mechanical and electrical engineering course at Rose Polytechnic Institute, of that city, graduating in 1892. He went to St. Louis in September, 1892, and entered the service of the Wagner Electric Mfg. Co., which he has served successively in the capacities of draughtsman, experimental and erecting engineer, assistant superintendent, assistant general manager and treasurer, general manager, and vice president and general manager. Mr. Layman was elected president of the Engineers' Club of St. Louis in 1906, and president of the St. Louis branch of the National Metal Trades Association in 1907. He is a full member of the American Institute of Electrical Engineers, associate member of the British Institute of Electrical Engineers, and member of the Business Men's League and the Mercantile Club of St. Louis.



H. W. HOYT,
Councillor, N. M. T. A.

Edward P. Robinson, of East Boston, was born in Massachusetts in 1860 and has always resided in that city. For a few years he was engaged in engineering work, and for the past 25 years has been connected with manufacturing, the last 15 years as superintendent of the Atlantic Works. He has been active in the work of the National Metal Trades Association since 1901, serving on the district committee, of which for three years he was chairman. In 1903 he took a prominent part in the organization of the Boston Metal Trades Association, and after its formation was a member of the executive committee until two years ago, when it was merged into the Boston branch of the National Metal Trades Association, of which branch he is now vice president.

W. A. LAYMAN,
Councillor, N. M. T. A.

CINCINNATI METAL TRADES ASSOCIATION COMMITTEES.

John W. Neil, of the McGowan Pump Co., president of the Cincinnati Metal Trades Association, has appointed the following committees to serve for one year:

Employment Bureau—E. F. DuBrul, Miller-DuBrul-Peters Co.; Oscar Mueller, Mueller Machine Tool Co.; Rudolph Mueller, Wm. Powell Co.; H. M. Norris, Bickford Drill & Tool Co.

Finance—J. C. Hobart, Triumph Electric Co.; F. A. Geier, Cincinnati Milling Machine Co.; S. L. Moyer, Lunkenheimer Co.; S. P. Egan, J. A. Fay & Egan Co.

Membership—P. G. March, Cincinnati Shaper Co.; S. P. Egan, J. A. Fay & Egan Co.; A. H. Tuechter, Cincinnati Machine Tool Co.

Transportation—C. Wood Walter, Cincinnati Milling Machine Co.; C. P. Egan, J. A. Fay & Egan Co.; Wm. Herman, Fosdick Machine Tool Co.

Apprenticeship—J. H. Day, J. H. Day Co.; C. H. Fox, Ahrens Fire Engine Co.; Jos. Wolf, Hisey-Wolf Co.

Technical Education—F. A. Geier, Cincinnati Milling Machine Co.; J. C. Hobart, Triumph Electric Co.; J. H. Day, J. H. Day Co.; Wm. Lodge, Lodge & Shipley Machine Tool Co.; S. P. Egan, J. A. Fay & Egan Co.

Co-operative Course—A. E. Robinson, American Tool Works Co.; Geo. Langen, Cincinnati Planer Co.; O. H. Broxterman, John Steptoe Shaper Co.; I. Raub, Cincinnati Electrical Tool Co.

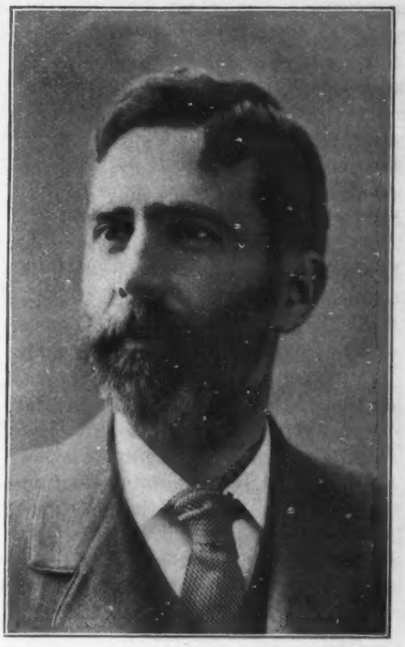
New Tools and Devices—F. L. Swanburg, D. T. Williams Valve Co.; Wm. A. Greaves, Greaves, Klusman & Co.; Wm. Pfau, J. T. Howsley Mfg. Co.

Legislation—F. Pentlarge, U. S. Bung Co.; Geo. Morris, John B. Morris Foundry Co.; F. Johannigman, Robinson Mfg. Co.; Phillip Gaukel, Chas. R. Hopple Co.; John McNeil, John Douglas Co.; Hugh Merrie, Hugh Merrie Co.

Entertainment—E. H. Hargrave, Cincinnati Tool Co.; P. O. Geier, Cincinnati Milling Machine Co.; R. B. McGowan, McGowan Pump Co.; E. Von Wyck, Von Wyck Machine Tool Co.; S. C. Schauer, Cincinnati Machine Tool Co.

Auditing—L. E. Rechtin, L. Rechtin & Bro.; Henry Dreses, Dreses Machine Tool Co.; John Johannigman, Oesterlein Machine Co.

Duty on Finished Castings.—That cast iron machinery parts which have been drilled, bored, planed, fitted or finished beyond the condition of castings are dutiable at 45 per centum as articles of metal wholly or partly manufactured, was held last week by the board of United States general appraisers. The protestants, the North American Lace Co., claimed that the machinery parts were castings and dutiable at eight-tenths of a cent per pound. The classification under paragraph 193 of the Dingley tariff act as wholly or partly manufactured articles has been considered correct by both the board and the courts for a number of years and numerous rulings have been made to that effect in the period.



E. P. ROBINSON,
Councillor, N. M. T. A.

The Garland Nut & Rivet Co., West Pittsburg, Pa., is making arrangements for the erection of an addition to its plant. This will be in the form of a new building of moderate size, which will be used as a galvanizing plant.

LARGE ATTENDANCE

At Brass Founders' Convention at Toronto is Forecasted.

The indications point to a large attendance at the Toronto, Can., convention of the American Brass Founders' Association, June 8-12, according to Secretary Fairlie. Representatives of the various affiliated associations are now on the ground perfecting arrangements for the entertainment of guests. Those intending to identify themselves with the association are urged to apply for membership before the convention. While the admission to the sessions of the association, as well as to the exhibits, is free to all, membership in the association will admit also to the social features of the convention provided by the entertainment committee. The provisional program includes a smoker, trolley ride, and a moonlight excursion on the lake. The following new members have recently joined the association: Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.; A. H. Warner, E. Stebbins Mfg. Co., Springfield, Mass.; M. F. Murphy, American Locomotive Co., Schenectady, N. Y.; Wm. H. Barr, Lumen Bearing Co., Buffalo; J. D. Squires, manager Lyman Mfg. Co., Buffalo; Fred Schnell, Buffalo.

The following papers will be read at the convention: "The Value of Liquid Fuel in Brass Foundry Practice," by W. N. Best; "The Efficiency of Brass Melting Furnaces," by F. A. Coleman; "The Metallurgy of the Bronze Age in Europe," by W. M. Corse; "Modern Appliances and Processes in Foundry Work," by F. H. Dimock; "Quality versus Quantity," by J. N. Gamble; "Prolonging the Life of a Crucible," by Dudley A. Johnson; "The Outside versus the Inside Man," by W. A. Porter; "The Electrochonical Cleaning of Metals and Its Application to Commercial Uses," by Charles H. Proctor; "Oil as a Fuel," by W. S. Quigley; "The Relation Between the Chemical and Physical Characters of Molding Sands," by Dr. Heinrich Ries.

At a meeting held in Carlisle, Eng., April 24, the Ship Building Employers' Association decided to order a lockout in every ship building yard in the United Kingdom. This action followed twice recorded votes of employes refusing to accept terms offered by the owners of the yards.

Business failures in the United States for the week ending April 30 numbered 282, against 254 last week and 163 in the like week of 1907.

BOOK REVIEW

Directory to the Iron and Steel Works of the United States; compiled and published by the American Iron and Steel Association, James M. Swank, general manager; 17th edition, corrected to March 1, 1908; xvi + 500 pages; 6 x 8½; cloth. Supplied by THE IRON TRADE REVIEW for $12, postpaid.

The present directory contains 50 pages more than its predecessor, which was corrected to August 1, 1904, but the additional number of pages does not indicate fully the growth of the iron and steel trade it represents, since much of the growth has been by old concerns and does not require much additional space in the book. The summaries of number of works, capacities, etc., are as of June, 1904, and November, 1907 respectively, the late additions bringing the descriptions up to points several months later, but not finding place in the summaries. The summary as to pig iron shows:

	June, 1904.	Nov., 1907.
Number completed furnaces	428	448
Capacity, gross tons	28,114,000	34,833,900

The totals of capacity are subject to the well understood allowance when one wishes to consider how much pig iron can actually be made in a year. The totals are the sums of the estimates of furnace owners and, therefore, have a touch of optimism; no allowance is made for accidents, or for relining, as a given furnace need not be relined in a year, while, with a hundred furnaces taken at random, 20 or 30 are likely to have to be relined in any year, losing usually a month or two. Then there are furnaces which have not been definitely abandoned, and, therefore, must be cataloged, but would run, if at all, only under very exceptional conditions. The total capacity should be discounted a few per cent for the unfailing optimism of furnace owners, from 5 to 10 per cent for accidents and relining, and a few per cent for furnaces cataloged but not really active in normal good times. The 34,833,900 tons of rated capacity become about 28,000,000 tons when one considers the rate at which these furnaces actually made iron, in quite favorable market conditions, before the decline in activity. This is a discount of 20 per cent, and measuring the 1904 furnaces by what they did in 1905, deducting for new furnaces in 1905, just a shade greater discount is indicated for that total.

The growth in three years and five months in pig iron, whether measured by rated capacity or actual performance, has been almost exactly 25 per cent, with further growth coming through the completion of furnaces which were in course of erection last November.

Electric Processes.

The making of pig iron and iron alloys by electricity finds a more important place in the present than in the previous directory, the number of plants having increased from two to seven. The present plants are: Electro Metallurgical Co., Chicago; plant at Niagara Falls, N. Y.; built in 1906 and enlarged in 1907, equipped with furnaces to make by electricity, ordinary ferro-chromium, low carbon ferro-chromium, high grade ferro-silicon, low carbon ferro-tungsten, ferro-vanadium, ferro-molybdenum, etc.; another plant at Glen Ferris, W. Va.; electric furnaces started in 1901; water power; acquired Feb. 1, 1907, from the Willson Aluminum Co.; ferro-chrome, ferro-silicon, ferro-tungsten, etc.

Titanium Alloy Mfg. Co., Niagara Falls, N. Y.; built in 1907 and put in operation August 17, 1907; titanium alloys, vanadium and other alloys.

Virginia Electrolytic Co., New York; plant at Holcombs Rock, Va.; electric furnaces started in 1892; water power; acquired in March, 1906, from Willson Aluminum Co.

Black Sand & Gold Recovery Co., Chicago; experimental plant at Hood River, Ore., in 1907, for the manufacture of pig iron and steel direct from black sand by electricity and charcoal; pig iron and steel first made in March, 1907.

Noble Electric Steel Co., San Francisco; plant at Heroult-on-the-Pitt, Cal.; first pig iron made in July, 1907; annual capacity, 4,500 tons; contemplates erecting a plant to produce by electricity and charcoal steel castings direct from the ore.

American Falls Electric Smelting & Refining Co., Pocatello, Ida.; contemplates making pig iron and steel by electricity at American Falls.

The Halcomb Steel Co., Syracuse, N. Y., does not make pig iron by electricity, but operates a four-gross-ton electric steel making furnace.

Open-Hearth Steel.

On account of there being so much new erection of open-hearth plants at present, even the recent statistics give no close line on the ultimate capacity in sight. The capacity of open-hearth steel furnaces built and building is given at 11,335,100 tons in June, 1904, and 18,824,900 tons in November, 1907. The actual annual output would hard-

ly reach this figure, but could probably exceed 15,000,000 by a very comfortable margin when present erection work is completed. This would compare with an actual production of 11,549,088 tons in 1907. The open-hearth capacity is 3,800,000 tons in excess of the Bessemer capacity, while in June, 1904, the difference was 2,300,000 tons in the opposite direction, despite the fact that the rated Bessemer capacity shows an increase of 1,400,000 tons.

In General.

Space limitations prevent reference to many interesting features shown by the directory. There are 137 completed works using natural gas, against 135 in 1904. There has been quite an increase in the number of interests listed in "Parts I, chiefly consolidations," a classification which was first adopted when the interests listed were chiefly consolidations, but which has been added to so that a very considerable proportion of the interests included are not consolidations. Deducting all duplications, so that the United States Steel Corporation, for instance, would count for but one, there were listed 52 interests in the previous directory, while 73 are listed now. The importance of the distinction, outside of the different place the works are given in the directory, is that in the case of interests named in Part I, the details as to capitalization are given, while the interests described in Part II, by states, are not described as to capitalization, other information being as full as for those listed in Part I. Such interests as the A. M. Byers Co., Cleveland-Cliffs Iron Co., Firth-Sterling Steel Co., Shenango Furnace Co., Joseph E. Thropp, Whitaker-Glessner Co., etc., now appear in Part I, while such interests as the Carbon Steel Co., Spang, Chalfant & Co., Colonial Steel Co., Otis Steel Co., etc., remain in Part II, which illustrates the difficulty of drawing a line which shall show clearly its reason for existence.

The majority of users of the directory are those who have become thoroughly familiar with its rigid and unchanging system of arrrangement and indexing, which is probably less convenient to a new user than it was with early editions of the directory, on account of the changes time has made. In the fore part, there is an alphabetical index to the names in Part I, and in the latter part an index to all interests whether named in Part I or Part II. In the latter index, reference is made to every page upon which mention is made of the interest, which sometimes results in a long list of pages for a given name, while only one of the references gives a full description. Where the concern is listed in Part I, one should use the index in the fore part, as the index at the end of the book sometimes gives a confusing list of pages. The Carnegie Steel Co., for instance, has a list of 58 different pages, the Crucible Steel Co., 13, and so on. Interests listed only in Part II frequently carry two different pages. In all these cases, one reference is the principal one, and a modest innovation could have been made by printing this principal reference in italics.

Again, it is sometimes desired to refer to the plants in a given district, and there is no index to districts. Pennsylvania, for instance, is divided into 10 districts, occupying 64 pages, and there is no means of finding a given one of them except by direct search. Even to find a state is not as simple as it ought to be, for the only index to states is not alphabetical, and some states are even grouped together. Should one wish to find Ohio, for instance, he must glance down until he finds the line "Texas and Ohio," while Illinois is found in the line "Indiana and Illinois." A reference to the page would give Indiana, while Illinois is five pages farther along. There are five general indexes, the one to the principal companies, including the consolidations, the one to the states, the one to names of works, the one to companies, and the one to pig iron brands. The first two of these are in the front, the other three in the back, and the chief one of all, the general index to companies, is placed between the index to names of works and the index to pig iron brands. As a single directory is used for years, and is usually referred to in haste, these points are not altogether inconsequential.

Great Increase of Capacity.

The 1874 directory listed 681 blast furnaces. Their capacity was not summarized, but these furnaces had produced 2,560,963 gross tons of pig iron in the previous year. The present directory lists 448 blast furnaces completed by Nov. 1, 1907, and their actual performance showed their capability of making about 28,000,000 tons in a year. In the third of a century from Sept. 1, 1874, to Nov. 1, 1907, the actual capabilities of the industry had more than moved the decimal point one place. The showing is even greater than that, since a third of a century ago the picture was one of a completed industry from the standpoint at that time as there were but few furnaces being built then, while to the capacity shown Nov. 1, 1907, as completed, there are to be added building furnaces having a capacity of close to 4,000,000 tons. The reduction of one-third in the number of furnaces and the increase of 10 times in the output reflect the great increase there has been in the capacity of the individual furnace.

There are now 11 standard rail mills; a third of a century ago, there were 62, but the 62 mills could not make three-quarters of a million tons while the present 11 mills can make four million tons. So much has been done by specialization and the employment of large capital. The single Gary plant, not included in the 11 mills here referred to, will be able to make a larger tonnage of standard rails than the entire 62 standard rail mills of a third of a century ago. Besides these 62 there were 22 light rail mills.

The directory a third of a century ago listed 37 forges, chiefly in New York and Pennsylvania. Now there are none, and the younger generation of the present day probably does not know that less than a quarter century ago one of the important methods of producing wrought iron was by the means of the Catalan forge, reducing iron ore direct to wrought iron. Of bloomaries, making blooms from pig iron and scrap, there were 47 in 1874, while now there are 13, 10 in Pennsylvania and one each in Ohio, Maryland and New York.

Business Improving.—The Woods Engineering Co., Alliance, O., reports that business conditions with that company during the past six weeks have shown a decided improvement. The company's best business comes from foreign trade, principally England, Germany, France and Japan. The machines now being made are already sold and the plant is working a full force over time to make deliveries. The company states that it has received a number of inquiries, both in this and foreign countries, concerning its new universal cutter grinder on account of the illustrated description published in THE IRON TRADE REVIEW of Feb. 20.

An official of the Lake Superior Corporation at Philadelphia says that the closing down of the rail mill of the Algoma Steel Co. is not indefinite. The blast furnaces will be continued in operation in order to provide sufficient material against the reopening of the steel rail mill.

GLOOMY OUTLOOK

FOR THE IRON TRADE IN GERMAN EMPIRE.

Prices of Sydicated Products Unchanged.—Many Small Works Closed.—American and English Pig Iron Imported.

(Special Correspondence.)

Dusseldorf, April 20.—The general depression on our market continues and is making further progress. No signs of improvement are to be seen anywhere; on the contrary, all prospects are bad. The prices for the syndicated materials, such as coal, coke, pig iron, billets, girders, beams, blooms and ingots, remain unaltered and make it impossible for the finished material industry to compete and to get fresh orders. Many of the smaller works, which do not dispose of their own raw materials, have been closed entirely on account of scarcity of orders and quite insufficient prices, whilst the big works with their own raw materials have had further to decrease their production. The fact that about 17,000 tons of American pig iron (southern) has been sold to Italy lately has not made much impression here, as these sales are regarded here to be occasional ones and not of any regularity.

The spring has not brought about any augmentation of orders as used to do in previous years and this fact is easily to be understood on account of the scarcity of money and the high bank rate, which is still 5½ per cent. The new loan of Prussia and the German Empire amounting to 650,000,000 marks ($154,800,000) at 4 per cent, has had only a very moderate success. It has caused a further scarcity of money and the general hope that the bank rate would become reduced during this spring may be abandoned. As soon as money becomes easier, even if only a little, there are at once a lot of towns, provinces, etc., trying to issue new bonds.

The "Stahlwerks-Verband," the pig iron syndicate and the other syndicates try to describe the situation better in their reports than it is indeed. It is very probable that the pig iron syndicate will not be renewed next time. A great number of its members are not at all satisfied with its policy and will prefer to go their way alone in future. The non-renewal of this syndicate would, of course, mean a further demoralization of our market.

Meantime, the German purchases of English pig iron continue. The inland consumption of all sorts of iron and steel is decreased to a minimum and export orders can only be gotten at a moderate extent and at ruinous prices.

METAL TRADES ORGANIZE

On the Pacific Coast—New League Formed at Portland.

(Special Correspondence.)

San Francisco, April 27.—The Pacific Coast Metal Trades League was formed last Saturday in Portland, Ore., by the metal trades and iron founders' associations of the Pacific states and territories, including California, Oregon, Washington and British Columbia. This league is to the Pacific coast what the National Metal Trades Association is to the rest of the country, and the new league starts upon its career of usefulness with a well-defined policy for united action, to protect the interests of the trade, to avoid friction, to repel imposition. The executive board of the California Metal Trades met in this city and voted that the association become an active member of the league.

The necessity of forming such a league had been felt by the employers on the Pacific slope for some time, and more especially when labor troubles arose and hampered work in different sections of the coast. The representatives of the metal trades and kindred industries met in Portland, Ore., one year ago, ostensibly for the purpose of forming a league for mutual protection against unjust demands and aggression. But the people were not then ripe for the formation of the league. Events which have transpired since that time have demonstrated that the league could or would remedy some of the evils employers complain of, and perhaps obviate other evils. The past year has been prolific in object lessons to employers on the Pacific slope, and especially in California, and the project of forming the league met with favor this time. When the league was successfully launched, with the assurance of the support of the leading iron founders, metal manufacturers and people in the trade, the United Metal Trades Association presented a handsome loving cup to F. J. Hoffman, of the National Founders' Association, as a token of appreciation of his effective work in aid of organizing the league.

The organization is considered one of the strongest in the United States, including the following organizations: The California Metal Trades Association, the United Metal Trades Association of Oregon, Washington and British Columbia, the Employers' and Founders' Association of Los Angeles and the Pacific Foundrymen's Association of Seattle, and several smaller associations.

The following are some of the representative men who attended the convention, and who are known throughout the country: W. H. Corbett, Willamette Iron & Steel Co., Portland; James W. Kerr, vice president California Metal Trades Association; W. G. Winterburn, Victoria, B. C.; F. W. Burfee, of Burfee & Letson, Bellingham, Wash.; I. Hulme, president Vulcan Iron Works, Seattle; F. E. Myers, of Heppley-Myers Co., Portland; T. B. Sumner, Sumner Iron Works, Everett, Wash.; Gilbert Hunt, Walla Walla, Wash.; Carl A. Zinn, manager Eagle Iron Works, Seattle; A. F. Smith, of Smith & Watson Iron Works, Portland; Charles M. Gunn, of Portland; F. Wolff, Phoenix Iron Works, Portland; H. E. Harris, Machinery Works, Portland; C. E. Grelle, Independent Foundry Co.; Herman C. Smith, of Smith & Watson; John Wood, of Wood Iron Works, Portland; F. E. Thompson, Multnomah Iron Works; A. J. Peaper, Oregon Brass Works; F. D. Lawrence, M. E. Heacock, Portland; J. T. Heffernan, of Heffernan Engine Works, Seattle; H. T. Clark, Portland Iron Works; O. E. Heintz, Pacific Iron Works, Portland; J. Bruce Gibson, Sumner Iron Works, Everett; L. S. Browning, assistant secretary, Portland; Charles M. Gunn, Columbia Steel Co., Portland; John L. Roberts, Puget Sound Iron & Steel Works, Tacoma; Harry F. Davis, secretary California Metal Trades Association, San Francisco.

The new officers of the association are: President, Thomas Sumner, of Everett; first vice president, John L. Roberts, of Tacoma; second vice president, J. V. Paterson, of Seattle; third vice president, W. H. Corbett, of Portland; secretary-treasurer, J. Bruce Gibson, of Everett.

Subscriptions to $3,000,000 of consolidated mortgage 20-year bonds of the New York Air Brake Co., recently offered to shareholders at 90, were far in excess of the block offered.

A LARGE TWIN-TANDEM COMPOUND DIRECT-CONNECTED REVERSING MILL ENGINE

The illustrations herewith show a twin-tandem-compound, condensing, direct-connected reversing engine, which is one of two which Mackintosh, Hemphill & Co., Pittsburg, are building for the Duquesne Works of the Carnegie Steel Co., and for the new Aliquippa plant of the Jones & Laughlin Steel Co. The engine, in addition to being probably the largest and heaviest of its type built, pre-

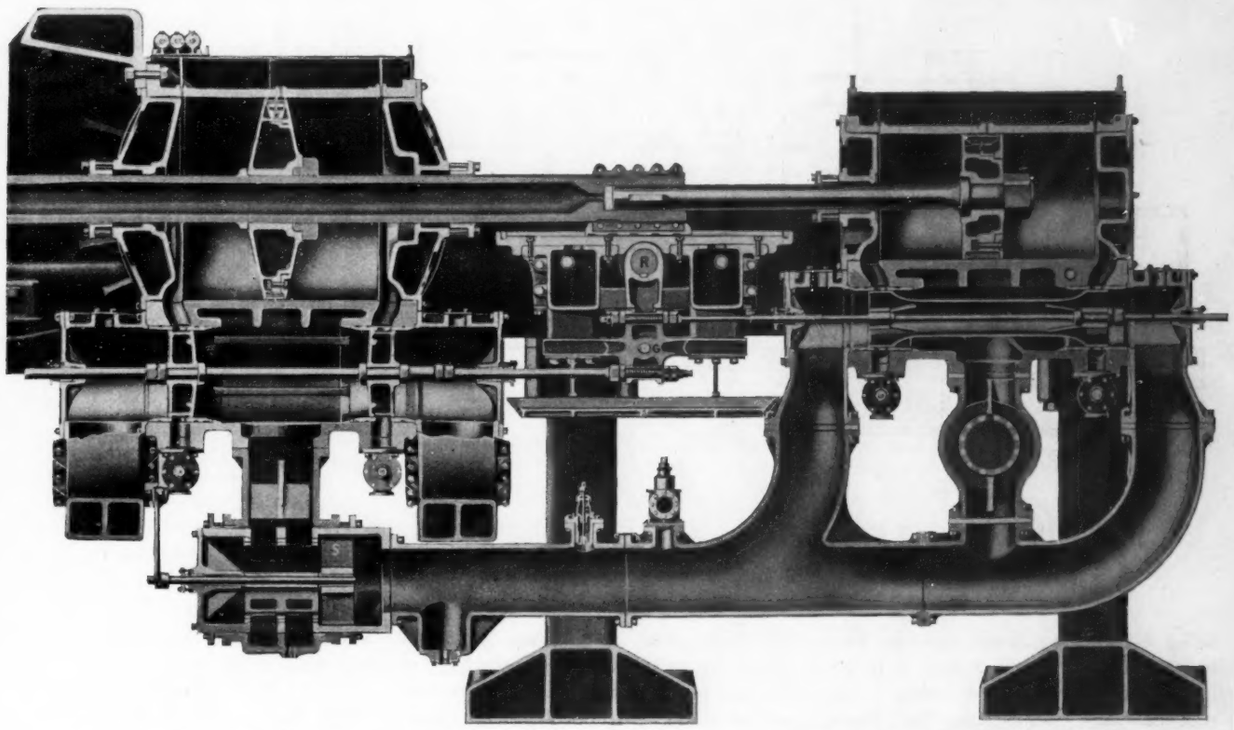


FIG. 1—SECTION THROUGH CENTER LINE OF CYLINDERS OF 20,000-HORSEPOWER MACKINTOSH-HEMPHILL ENGINE.

sents some radical departures from the accepted standards of design of this type of engine, which make it especially noteworthy.

The engine, which is designed to operate under a steam pressure of 150 pounds per square inch, and to develop, efficiently, at 100 revolutions per minute, 20,000 horsepower, has high pressure cylinders 44 inches diameter and low pressure cylinders 70 inches diameter. The stroke of the engine is 60 inches and it is designed to run at 100 to 150 revolutions per minute. Piston valves are used, these being placed underneath the cylinders and constituting the most radical departure from accepted practice. The reasons for this will be discussed later. The link motion is of the Stephenson type with variable cutoff. This portion of the engine also presents novel considerations of design and construction which will be taken up in detail later in this article. Exceptionally large wearing surfaces have been provided throughout.

The foremost consideration kept in mind in the design of the engine was the accessibility of all parts, looking to their easy removal or replacement in the event of breakage or wear. The number of moving parts in the valve motion and other portions of the engine was also reduced to an absolute minimum. All the reciprocating parts have been made as light in weight as possible, consistent with strength; the piston rods, connecting rods and even the valve rods being made hollow wherever possible. In addition to these features, details were introduced tending to safeguard the engine against breakages, racing and other accidents, which might occur through the negligence of the attendant or otherwise.

Bed Plates.

Taking up now the general construction of the engine, reference should be made to the accompanying drawings and to the photographic plan, elevation and section on the insert sheet, and also to the photographic sectional elevation of the engine taken through the center line of one of the cylinders. By referring to these it will be noted that the engine has three journal bearings on the main shaft and that the shaft terminates on one end in a counterbalanced crank disc, while the opposite engine drives through a balanced crank. It will also be noted that the main bed plates are of box form and of extremely heavy construction. They have a width at the bottom of 12 feet and are 36 feet long with a height of 5 feet from the bottom face to the center of the engine shaft. Underneath the journals the bed plates are reinforced to give a total depth of 6 feet 9 inches from the center of the shaft to the bottom face, which is flat and has been designed to contain the minimum num-

ber of core holes possible. The bed plates are in two pieces fastened together by four fitted bolts, each of 3 inches diameter, and 27 links each 2½ inches square. The position of these links is plainly shown in the elevation and the section on the insert sheet. The extension bed plates, carrying the high and low pressure cylinders, valves, etc., are also secured to the main bed plates by means of similar bolts and links, as is clearly shown in the illustrations. The crank shaft journal bearings are three in number and are cast integral with the bed plates. The journals are 29 inches diameter, that next to the crank disc being 4 feet long, while the two next to the mill are each 3 feet 8 inches long. All are fitted with bottom bearings, adjustable by liners, and quarter bearings adjustable by means of cast steel wedges and steel bolts, together with caps, each of the latter being held in place by four bolts and provided with oil boxes. The bearings and caps are lined with babbitt metal.

The cylinder ends of the bed plates carry the main crosshead slides and are faced and drilled to receive the low pressure cylinders at their rear ends. A 12-inch hole is cast longitudinally in each of the four legs directly under the journal bearings to receive forged steel reinforcing bolts 9 inches diameter in the body. These are upset at one end for keys and at the other are provided with steel nuts bearing on a steel washer. The location of these bolts is shown in the illustration, Fig. 2, which is a transverse section through the main journal bearing on the mill side of the engine. On the lower part of each bed plate, and directly under the journal bearings, forged steel reinforcing links are shrunk on suitable lugs. These links are placed at the sides of the bed plates and as near as practicable to the bottom.

The bed plates are tied together at the shaft end by a casting inserted between the bed plates and secured to them by bolts and keys. This feature shows clearly in the plan view on the insert sheet. At the opposite end of the bed plate a distance piece is fitted, being planed and attached to the bed plate with bolts. This casting carries the steam reversing and cataract cylinders for operating the link motion and the tumbling shaft for carrying the links. In addition it carries the brackets for the valve-stem connecting rods.

The crosshead slides are of cast iron and bolted to the main bed plate. They are so arranged that the main crossheads can over travel the ends of these slides without injury to the main bed plates. This arrangement permits the removal of the crosshead from the front end of the engine (see Fig. 3) in the event of the breakage of a piston rod or other injury to the engine, and also obviates any danger of breaking the frame in the event of such accident. The low pressure cylinders are, as stated above, 70 inches diameter. They are securely fastened at the front end to the bed plates by bolts of requisite size, the rear ends of the cylinders resting on the extension bed plates. These extension bed plates are carried upon four posts extending down to concrete foundations and located as shown in the elevations of the engine on the insert sheet and in Fig. 1. These posts have a bearing area on the foundations of 80 square feet each. The extension bed plates are also of box form as shown in the illustration, Fig. 4. They are tied together by distance pieces, which carry the intermediate cross head slide, valve stem slide block and the rock shaft brackets for the valve mechanism.

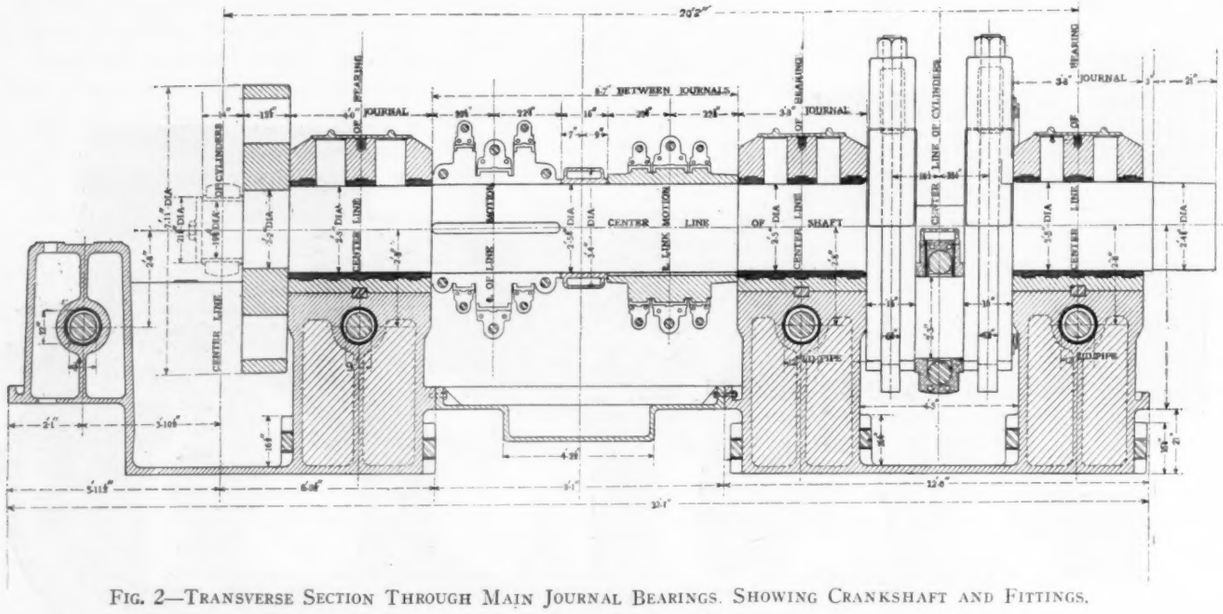


FIG. 2—TRANSVERSE SECTION THROUGH MAIN JOURNAL BEARINGS. SHOWING CRANKSHAFT AND FITTINGS.

Cylinders.

The high pressure cylinders are secured to the extension bed plates by keys and by 2-inch bolts. They are supported directly by feet cast on the cylinders, which rest on the extension bed plates, the keys being placed in the middle of the feet to allow for expansion. All four cylinders are made of close-grained air furnace iron, and are provided with piston valves with removable seats. Both high and low pressure cylinders are provided with two 6-inch snifting valves and two 3½-inch automatic drain valves. The steam nozzle of the high pressure cylinder is 17 inches diameter and the two exhaust nozzles are each 22 inches diameter. The steam nozzle of the low pressure cylinder is 22 inches diameter, while the exhaust nozzles are

24 x 32 inches, of rectangular section.

Cylinder Heads.

The cylinder heads are of cast iron and a novel construction has been adopted in the attachment of the front heads to the cylinder. Referring to the illustration, Fig. 1, it will be noted that the low pressure cylinder is secured at its front end to the main frame of the engine by through bolts in the cylinder flange. The cylinder head is set into the cylinder and a flange cast on it bears against the end of the cylinder inside of the frame, being secured thereto by studs in the cylinder body. The other heads are secured by through bolts 1¼ inches diameter. In case of accident, due to water or other causes, the heads are free to break, thus avoiding injury to other and more important parts of the engine. The front heads of the high pressure cylinder and both heads of the low pressure cylinder have stuffing boxes in which metallic packing is used.

Pistons.

All pistons of the engine are steel castings provided with cast steel followers. The shape of the pistons in the low presure cylinders is the double conical type, which is standard in Mackintosh-Hemphill engines. This piston is stated to have a maximum rigidity and a minimum of weight. The pistons in the high pressure cylinders have parallel sides and are cored out as shown in the illustration, Fig. 1. The total depth of the high pressure pistons, together with the packing, is 14 inches. The total thickness of the low pressure pistons is 18½ inches. Inasmuch as they are carried by the piston rods the width of the packing is only 6 inches. The packings differ in the two engines; in one case they consist of split bronze rings inlaid with babbitt metal and inner bull rings of wrought iron, these being adjusted by means of springs and set bolts with bronze lock nuts; in the other case they consist of solid bull rings of bronze inlaid with babbitt metal. These rings bear directly on the cylinder walls and, in the high pressure pistons, are adjusted by means of steel wedges. A cast iron spring ring with a bronze keeper is provided for each piston. The low pressure pistons are carried on the piston rods, and, therefore, float in the cylinders.

Piston Rods.

The piston rods for the low pressure cylinders are hollow steel forgings 16 inches outside diameter, oil tempered and finished all over. Forged steel nuts, also finished all over, secure the pistons to the rods. The mode of connection is shown quite clearly in the illustration, Fig. 1, the piston bearing against a shoulder forged on the rod, and being drawn up to this shoulder by means of the nut screwed on the rod on the opposite side. The fits of the piston rod into both the main and intermediate cross heads are straight, the rods being secured thereto by keys, which are made from nickel steel forgings. The high pressure piston rods are solid steel forgings 9 inches diameter and are secured to the pistons by heavy steel nuts, which draw the pistons up against a shoulder turned on the rod. They are attached to the low pressure piston rod by keys, the high pressure piston rod fitting into the low pressure rod.

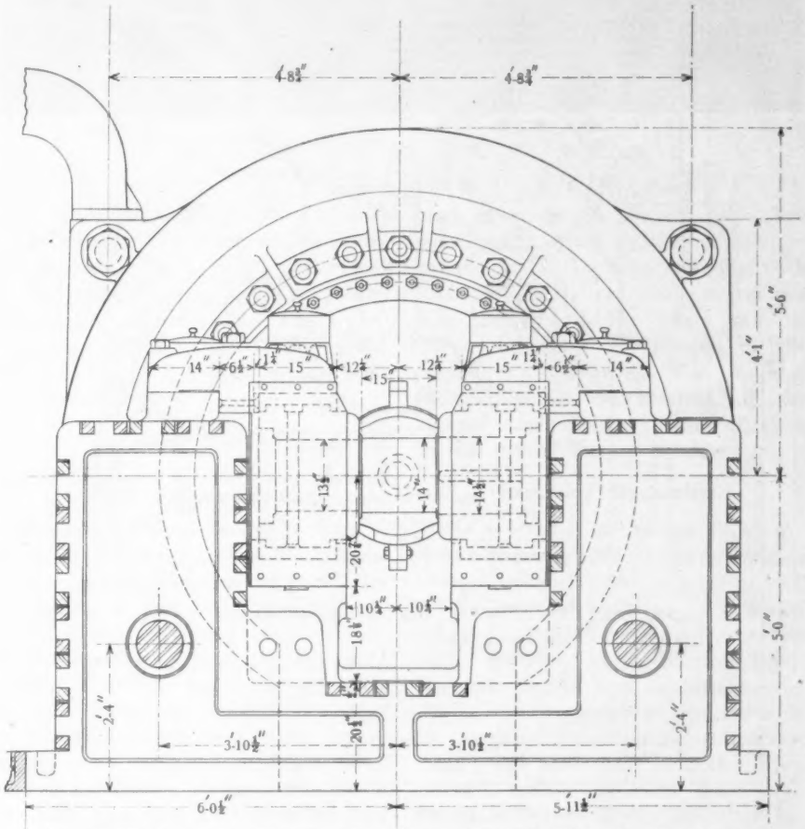


FIG. 3—ELEVATION AT JOINT OF BED PLATE, LOOKING TOWARD HOOD END.

Crossheads.

In connection with the piston rods the intermediate crossheads may be well discussed. One of these is shown in the illustration, Fig. 6. The crosshead body is a steel casting bored to fit the low pressure piston rods and fitted with cast iron shoes 36 inches long and 24 inches wide, babbitted on the face. Adjustment for wear can be made between the crossheads and shoes. The crosshead is not required to transmit any energy from the high pressure to the low pressure piston rods. This is done entirely through the medium of the nickel steel key connecting the two rods. The only function of the crosshead is to support the ends of the high and low pressure rods and maintain them in a straight line. Motion is transmitted to the crosshead from the rods by means of a projecting ring turned on the inside of the crosshead, which fits into a corresponding groove in the low pressure rod. This fit is shown in the illustration, Fig. 6. The crosshead is made in two pieces bolted together with five through bolts top and bottom, the nuts being pinned on the bolts.

The main crossheads are steel castings, with a forged wrist pin 14 inches diameter by 15 inches long at the journal. This pin is keyed in the crosshead to prevent turning and is held in place by two bolts. The crosshead shoes are of bronze and have babbitted faces 4 feet 6 inches long by 15 inches wide. This gives a total bearing surface of 1,620 square inches for each crosshead. The adjustment for

wear is made between the crossheads and slippers.

Connecting Rods.

The connecting rods are steel forgings and are 13 feet 9 inches center to center of wrists. The rods are of different sizes, that on the mill side of the engine being the larger. The smaller rod has a solid crank end fitted with brasses, lined with babbitt metal and adjusted with steel wedges and bolts. The larger rod has a marine type crank end of forged steel, the cap being held to the connecting rod by two nickel steel bolts of 7¾ inches diameter. The diameter of the wrist of the smaller rod is 19 inches and its length is 14 inches. The crosshead end of this rod is fitted with a strap, gib and key with brass bearings for the journal, which are 14 inches diameter and 15 inches long. The wrist of the larger rod is 27 inches diameter by 17 inches long. The construction of the crosshead end and the dimensions of the wrist are the same as those of the smaller rod.

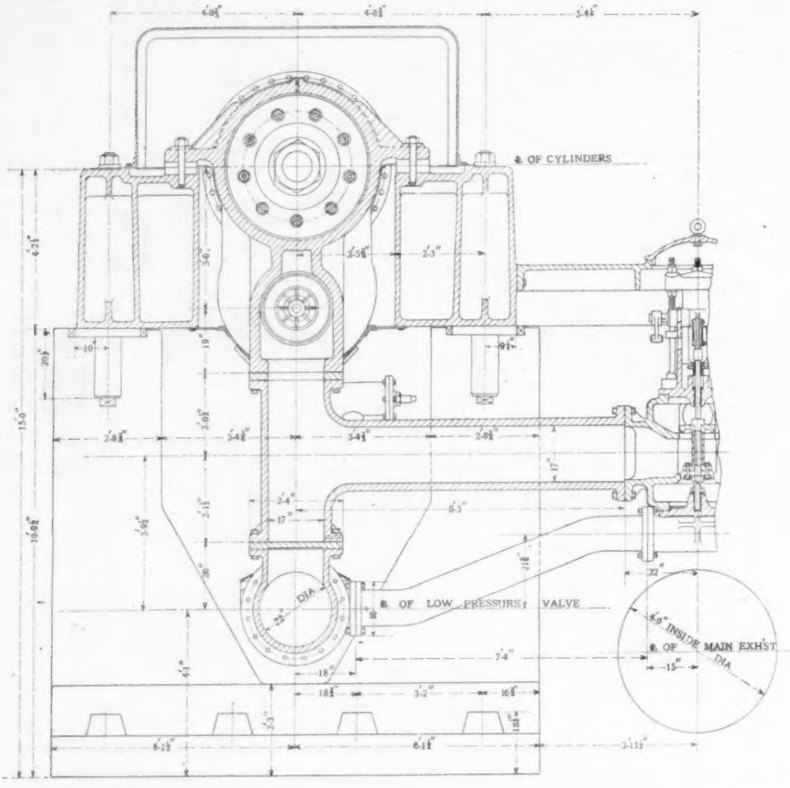


FIG. 4—TRANSVERSE SECTION THROUGH HIGH PRESSURE CYLINDERS AND HIGH PRESSURE STEAM PIPING.

Crank Shaft.

A solid steel forging, machined all over, forms the crank shaft. A 6-inch hole extends along the axis for the entire length of the shaft, and three journals are provided, two of them 44 inches long by 29 inches diameter, and one 48 inches long by 29 inches diameter. The body of the shaft has a diameter of 29¼ inches. The wrist of the crank shaft is 27 inches diameter and 17 inches long, while the wrist on the crank disc is 19 inches diameter by 14 inches long. The single crank is a steel casting of counterbalanced disc form, pressed on to the shaft and secured by two steel keys.

Location of Valves.

The above is a general discussion of the principal constructive features of the engine, and we will now take up and discuss in detail some of the special problems encountered and designs carried out in connection with this engine. First in order of these is the location of the piston valves underneath the cylinder, and the steam connections of the valves. The primary idea in placing the valves in this location was to secure perfect drainage of the engine. The conditions of operation of a rolling mill engine are such, that while it may run continuously for a long time, it also may be at rest for considerable periods, sometimes as much as an hour at a time. Under these conditions, any steam remaining in the cylinders condenses to water, as does the steam in the receiver. With the valves placed in the ordinary location, above or alongside the cylinder, the sudden starting of the engine could easily result in the rupture of the cylinder heads and other serious breakages in different parts of the engine through the water of condensation having to be forced by the pistons through the exhaust ports. With the valves placed underneath, as in this engine, any water forming in the cylinders would naturally drain into the valve chambers, and thence into the exhaust pipe, the exhaust port at one end or the other of the cylinder always being open. The water can be easily removed from the receiver by drain pipes, which are properly steam trapped.

Steam Connections.

In connection with the valve mechanism, a consideration of the steam connections is interesting. Referring to the sectional elevation on the insert sheet, the throttle valve, which is of the balanced poppet type, is seen at A. From the engine side of the throttle valve a connection B may be noted leading to another balanced poppet valve C, which is operated by a series of levers from the platform of the engine. This poppet valve admits, when required, live steam to the receiver E through the pressure regulating valve D. The function of this latter valve is, when the engine is standing, to maintain steam in the receiver at a pressure equal to that of the exhaust pressure of the high pressure cylinder when the engine is in operation. Under normal conditions, when the engine is idle, it remains in the position shown in the illustration allowing a free passage of steam from the high pressure steam inlet pipe to the receiver until the steam in the receiver has been brought up to the predetermined pressure when the valve rises and closes the ports, shutting off the steam to the receiver. As the steam in the receiver condenses the pressure becomes less, when the spring causes the valve to travel downwards, again allowing enough live steam to enter the receiver to maintain the desired pressure. This operation continues as long as the engine is standing idle, providing the valve C be kept open, so that when it is desired to start the engine, there is always a proper volume of steam in the receiver to cause

the low pressure cylinder to do its share of the work at once, without running the engine until the necessary quantity of steam has been discharged by the high pressure cylinder, as would be the case were this arrangement not installed.

On shutting down the engine it is necessary that the supply of steam be cut off from the low pressure cylinder at the same time as from the high pressure, because the volume of steam in the receiver is sufficient to cause the engine to operate for a few revolutions, with possible resulting damage either to the engine or the mill. To prevent this operation, a stop valve S, Fig. 1, is inserted in the connection between the receiver and each low pressure valve chamber. By an arrangement of the controlling levers, this stop valve is closed simultaneously with the throttle valve, thus cutting off steam from both cylinders at about the same instant. The valve D in the sectional elevation on the insert sheet, is of new design on which patents have been applied for.

Valve Gear.

Unusual care was exercised in designing the valve gear. The object constantly kept in view was the elimination of as many moving parts as possible and the reduction in number of rock shafts. The result attained was eminently satisfactory, there being but two rock shafts and six pins in the entire transmission from eccentrics to the piston valves of the engine.

Reference to the sectional elevation through the cylinders, Fig. 1, shows clearly the relative positions of the valves in regard to the cylinders. The location of the rock shaft is shown at R. To reduce the clearance, the valve chambers were necessarily brought as close to the cylinder bodies as possible, and on account of the varying diameter of the high and low pressure cylinders, the center lines of the two valve chambers are at different elevations. The valve rods are brought forward from the high pressure valve chamber and backward from the low pressure and terminate in a slide block A, moved by an arm depending from the rock shaft. The rock shaft carries on its other end an arm to which the eccentric connecting rod is attached by means of a single link.

Three eccentrics are used for each half of the engine, made in halves and bolted together. The two outer eccentrics operate one end, and the middle eccentric the other end of the link. The outer eccentrics are each 7 inches face, while the middle one has a width of 12 inches. The eccentric straps are of steel and brass lined, with brass liners inserted in the joints to permit of adjustment for wear. The eccentric rods are of forged steel and finished all over. The eyes of these rods are brass lined.

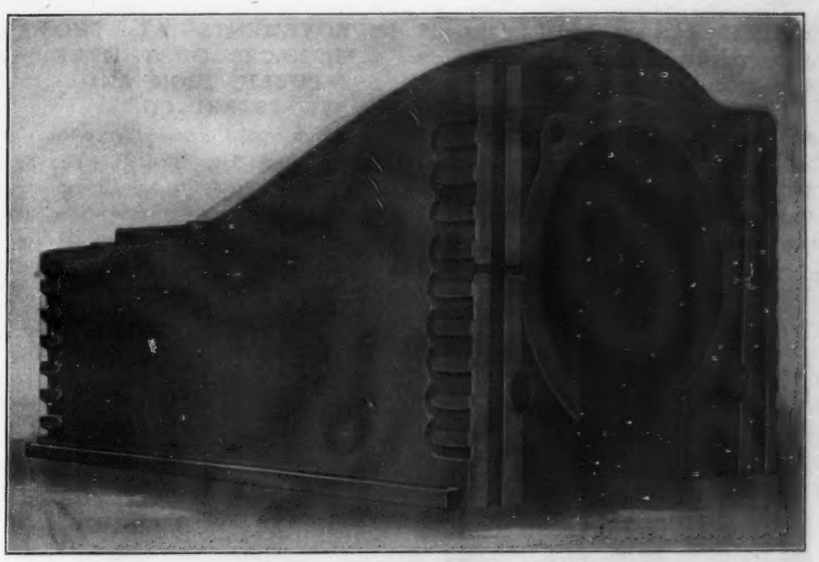


FIG. 5—PORTION OF MAIN FRAME OF ENGINE.

Rock Shaft.

Following out the necessity of having all parts readily accessible, the rock shaft has been so designed as to permit of its removal with a minimum of trouble. The method of doing this is shown in the illustration Fig. 9, which is a transverse section of one-half the engine through the rock shaft. It will be noted, by reference to this illustration, that the rock shaft is of varying diameters, being larger at the outer end, where it has a diameter of 9¼ inches, stepping down to a diameter of 7¾ inches at the bearing at the inner side of the engine. It has four journals, the outer one being in a sleeve set in the extension bed plate, which bears against a shoulder on the rod. To take out the rock shaft, it is only necessary to remove this sleeve and the shaft can be drawn out from the outside of the engine. This drawing, Fig. 9, also shows the relative location of the rocker arms on the rock shaft in regard to the engine cylinders.

Reversing Mechanism.

The reversing mechanism is of the standard steam driven type using a cataract cylinder filled with oil to lock at the various positions of cut off desired by the operator, the valves being operated by a floating lever. The links are of the Stephenson type and are counterweighted, as shown in the sectional elevation on the insert sheet. The levers carrying the links, as well as the balanced lever connected to the reversing apparatus are steel castings, bored, keyed and forced on a forged steel tumbling

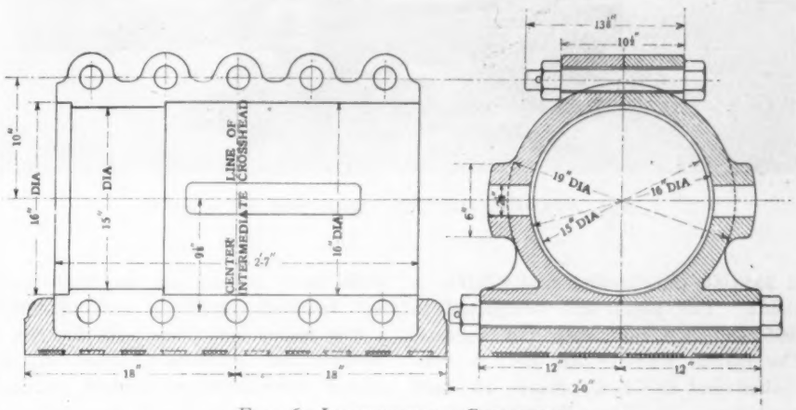


FIG. 6—INTERMEDIATE CROSSHEAD.

shaft. The pins are steel forgings and ar provided with keys to prevent their turning in castings.

The engine is piped throughout for continuous lubrication and is furnished with trays, piping and gutters for returning all oil used to a central point on the engine, which is connected with a central gravity return oiling system. The total weight of the engine will be about 2,100,000 pounds.

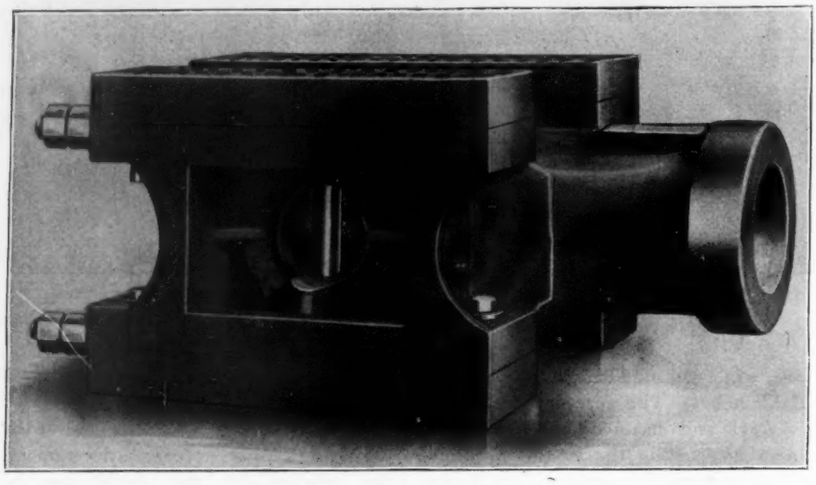


FIG. 7—MAIN CROSSHEAD.

Car Plant's Absorption.—Announcement is made that the J. G. Brill Co. has purchased the controlling interest in the Danville Car Co., Danville, Ill. The Danville company has a capital of $650,000 outstanding, and $22,000 in bonds. The plant was completed in 1906 and had met with fair success. The formal transfer has been accomplished and the new officers are now in charge. The Danville plant covers a tract of 217 acres. The name of the company will remain unchanged.

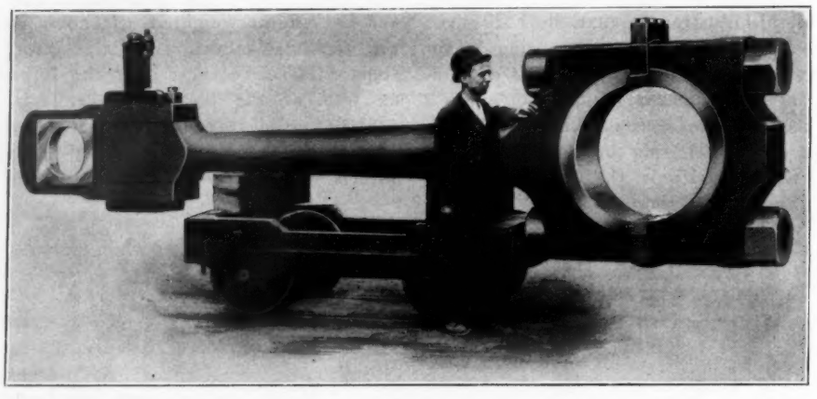


FIG. 8—CONNECTING ROD, MILL SIDE OF ENGINE.

IMPROVEMENTS AT THOMAS FURNACES OF THE REPUBLIC IRON AND STEEL CO.

(Editorial Correspondence.)

Birmingham, Ala., April 25.—The Republic Iron & Steel Co. has almost completed extensive improvements which have been under way for some time at its Thomas furnaces near this city. This plant comprises three stacks and a battery of coke ovens. Of the three stacks, No. 3 is at present out for relining, and the other two operating on foundry iron.

The most extensive improvement which has been completed is the building of four new stoves for No. 1 furnace. The old shells were utilized, but the brick work was renewed completely. In adddition, a new engine house was built for No. 1 furnace, and two Allis-Chalmers disconnected cross-compound engines installed in it. A third engine of the same type is to be erected, the foundations already being in.

In connection with these engines a condensing plant was installed, using a Weiss barometric condenser. The circulating water is supplied by two centrifugal pumps, direct-connected to high speed engines. A Cochrane feed water heater also forms part of the new equipment installed for No. 1 furnace.

In connection with the condensing system, an interesting problem in water supply has been worked out at these furnaces. The greatest handicap of the Birmingham district for manufacturing purposes is the lack of an ample water supply. The only available water, aside from the city supply, is from a creek, which flows past all the principal concerns, starting with the Vanderbilt furnace of the Birmingham Coal & Iron Co. at one end, and ending with the Ensley plant of the Tennessee Coal, Iron & Railroad Co. at the other. The volume of flow of this creek is so small as to render it out of the question as a condensing water supply under natural conditions.

The problem was solved at the Thomas furnaces by building two large ponds, supplied by the creek. The water for condensing is taken from the second of these ponds, considered in the direction of flow of the creek, and returned to the first pond after passing through the condensers. The ponds are of such size that the velocity of flow through them is low, and the water from the condensers has plenty of time to cool before it reaches the second pond and is again passed through the condensers. The water is thus used over and over, and the creek practically has only to make up the evaporative losses from the ponds.

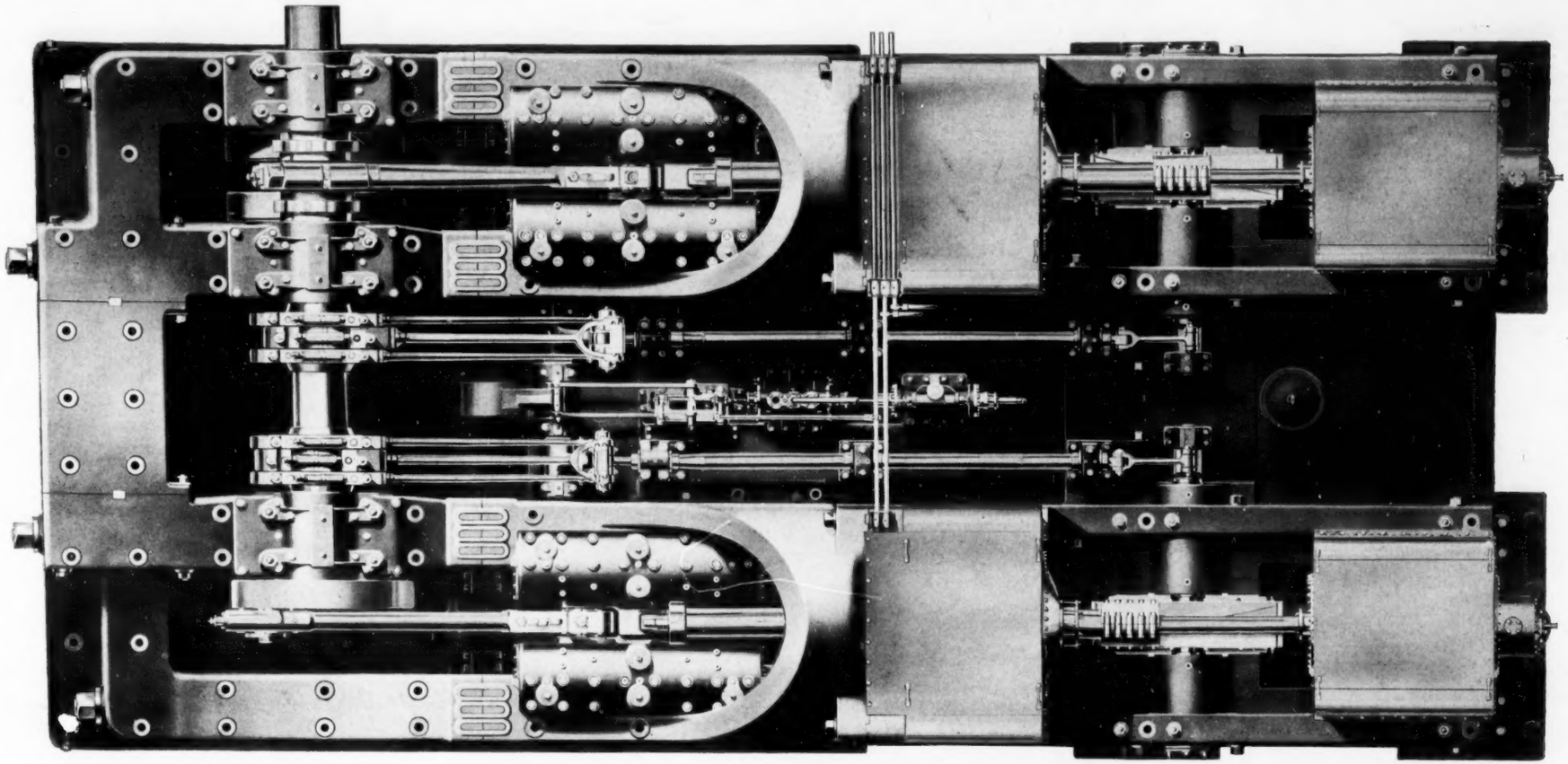
While the No. 3 stack is being repaired, advantage is being taken of the opportunity to overhaul the blowing plant. Additional blowing capacity is being installed here also, in the shape of two Allis-Chalmers engines similar to those at the No. 1 stack.

This Thomas plant is one of the most interesting in the south in many respects, inasmuch as it is a splendid example of an old plant, well arranged and improved from time to time to keep pace with modern requirements. It was built about 1887, before the days of the skip hoist for furnaces. Yet it had a very near approach to the skip hoist for charging, an arrangement which permitted the introduction of the skip hoist when it finally appeared, with a minimum of change to the furnaces or stock houses. How this change was accomplished will be shown below.

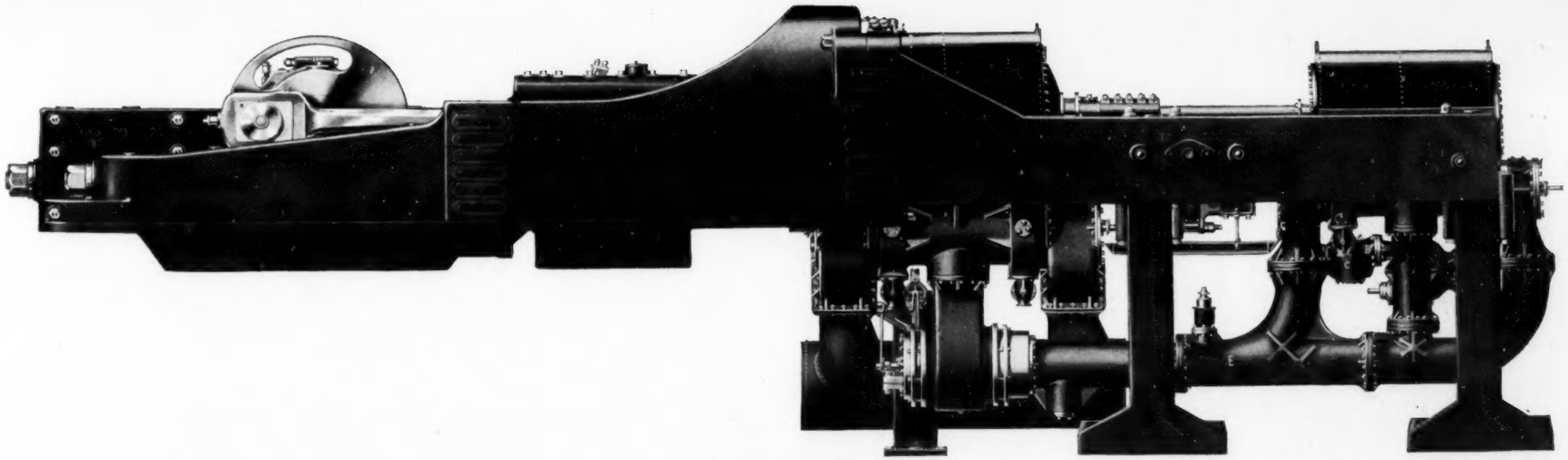
The furnaces were arranged in a straight line, with the stoves adjoining. But a single stock house was built, a long structure extending the full length of the line of furnaces. The stock house is set quite a distance away from the fur-

TWIN-TANDEM, COMPOUND, CONDENSING, DIRECT-CONNECTED REVERSING ENGINE, BUILT FOR THE CARNEGIE STEEL CO. AND JONES & LAUGHLIN STEEL CO. BY MACKINTOSH, HEMPHILL & CO., PITTSBURG.

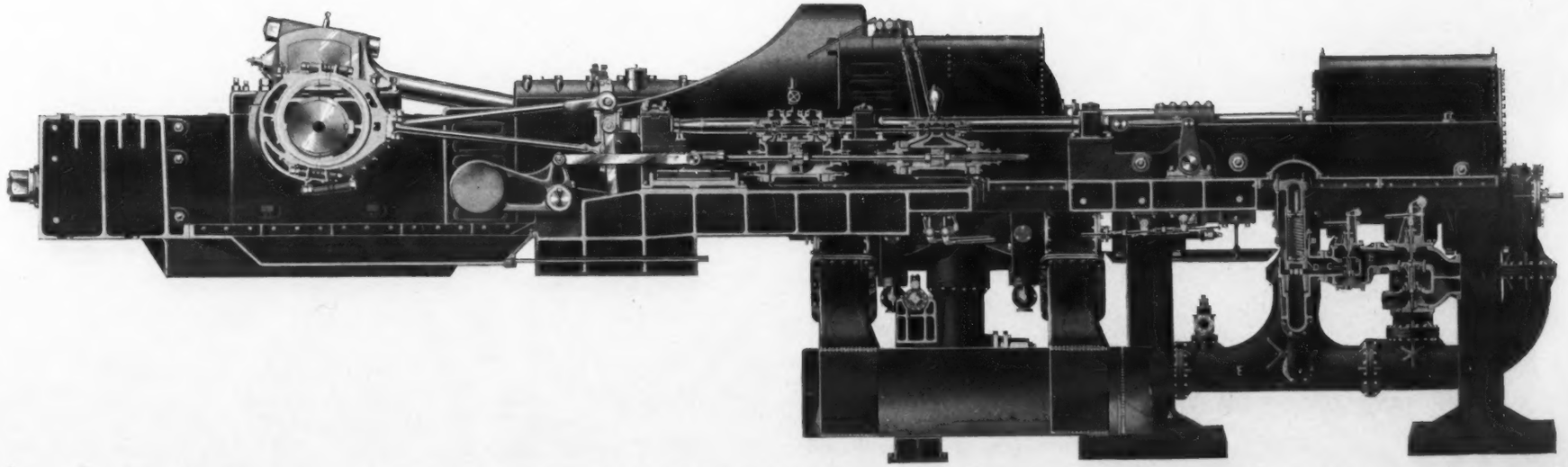
HIGH PRESSURE CYLINDERS 44 × 60 INCHES; LOW PRESSURE CYLINDERS 70 × 60 INCHES; REVOLUTIONS PER MINUTE, 100; HORSEPOWER, 20,000.



PLAN OF ENGINE.



ELEVATION OF ENGINE.



SECTIONAL ELEVATION THROUGH CENTER LINE OF ENGINE.

Supplement to
THE IRON TRADE REVIEW
May 7, 1908

nace, and from each furnace an inclined railroad, at an angle of about 30 degrees from the horizontal was built leading to the furnace tops. This railroad became the track for the skip car when the skip hoist and automatic charging came in. Under the original plan, this incline carried a car which dumped its load into hand-charging buggies at the furnace top, from which it was dumped into the furnace. It was a comparatively simple matter to change the car, feeding the buggies to a skip car, and to rearrange the incline as a skip hoist.

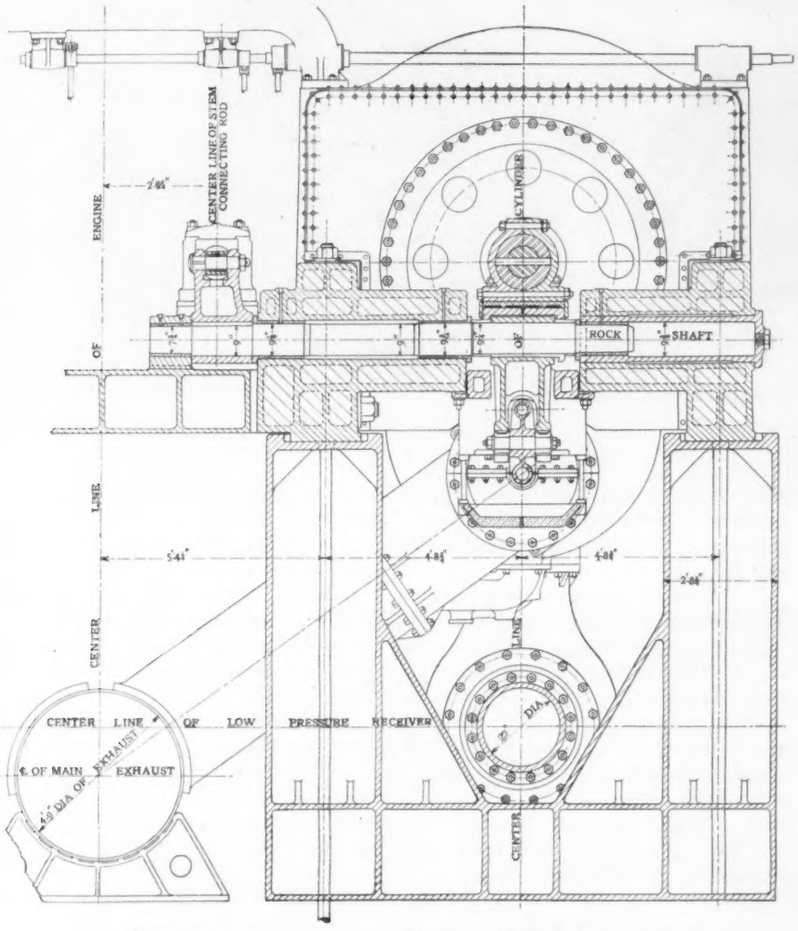


FIG. 9—TRANSVERSE SECTION THROUGH ROCKER SHAFTS.

The furnaces were originally 75 feet high. It was decided some years ago to make them higher, and accordingly 15 feet was added. This results in a very peculiar appearance, as the additions were carried up parallel to the axis of the furnaces instead of continuing the original taper of the shells. This charge necessitates the rebuilding of the incline from the stock house, and the making sharper of its angle from the horizontal, although it is still much less than is usually seen around furnace plants. When the change in height was made, the furnaces were fitted with McKee revolving distributors which are giving eminent satisfaction.

A rather unusual system is employed in the dust catchers at these furnaces. Instead of the downcomers being led into the dust catchers in the usual manner, they enter at the bottom. The dust catchers are of unusually large diameter, and the gas leaves them at the top through a goose neck. The theory upon which this construction is based is that by expanding the gas to a large volume in the bottom of the dust catcher, it will move through it at a comparatively low velocity, which will not be sufficient to carry the dust along with it into the goose neck. Consequently the dust will remain in the bottom of the dust catcher until removed. The results attained seem to justify the theory.

To return again to the stock house. The skip cars of two of the furnaces descend under the stock house only a sufficient distance below it to permit of their being charged from cars on the yard level. The skip cars of the third furnace descend a considerably greater distance, and are charged from a car in a tunnel under the stock house. A trestle extends from the yard level to the top of the bins, enabling ore, coke, etc., to be dumped directly into them from the railroad cars on top.

The coke ovens are of the bee hive type and are arranged in rows extending at right angles to the stock house, and but a short distance from it on the opposite side from the furnaces. The plant comprises 910 ovens, which, it is stated, is the largest single battery in the United States. They are elevated a sufficient distance above the yard level, so that the bench on which the coke is drawn is at the right level to permit the coke being shoveled easily, into cars on an industrial railroad laid between the ovens at the yard level. This industrial road runs up to the top of the stock house, cars being handled by narrow gage locomotives. The advantage of having the coke plant at the furnace is manifest. The coke is at hand when needed, is subjected to a minimum of handling, and the consequent breakage is small. The coke plant, when in full operation employs about 300 men.

A feature about this plant, and one which leaves a most pleasant impression, is the extreme neatness of the place. The yard is carefully cleared of everything which does not properly belong in it. Everything which is in the yard is placed where it will not only not be in the way, but where its presence is not conspicuously forced on the attention. There seems to be a place for everything, and everything is in its place. This is a point well worth the attention of managers in all lines, for a neat and well ordered plant is, unquestionably, not only indicative of, but conducive to, efficient operation.

Technical Press Officers.—The Technical Publicity Association at its annual meeting, April 30, elected the following officers to serve during the ensuing year: President, C. S. Redfield, advertising manager, Yale & Towne Mfg. Co., N. Y.; first vice president, Rodman Gilder, publicity manager, Crocker-Wheeler Co., Ampere, N. J.; second vice president, C. N. Manfred, manager advertising department, H. W. Johns-Manville Co., N. Y.; secretary, H. H. Kress, publicity department, A. S. Cameron Steam Pump Works, N. Y.; treasurer, H. M. Davis, advertising manager, Sprague Electric Co., N. Y.; members of executive committee, F. H. Gale, charge of advertising, General Electric Co., Schenectady, N. Y.; and C. W. Beaver, special representative, Yale & Towne Mfg. Co., N. Y. Twenty new members have joined the association since the last annual meeting.

Earnings for the first nine months of the year by the Republic Iron & Steel Co., which include the five months of depression, are said to show a surplus of nearly $1,000,000 in excess of preferred dividends.

THE WESTINGHOUSE MILL MOTOR

The installations of electric motors for driving auxiliary machinery in steel mills have increased rapidly in the last few years, largely because their general characteristics make them particularly adaptable for this class of service; and owing to their ruggedness, mechanically and electrically, and the perfection of the control system now developed, the electric drive gives results that are exceedingly satisfactory and reliable. The temperature in the mills is generally high, great quantities of metallic dust are present, the loads vary rapidly between wide limits, subjecting the motors to excessive mechanical and electrical strains, frequent reversals are required, and uninterrupted service with practically continuous operation is a necessity.

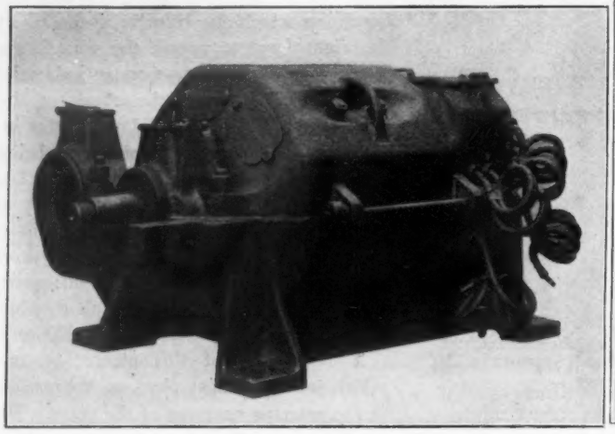


FIG. 1—WESTINGHOUSE MILL TYPE MOTOR.

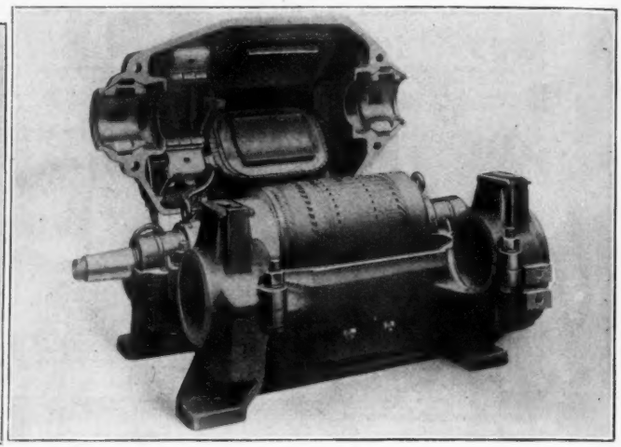


FIG. 2—WESTINGHOUSE MILL MOTOR WITH UPPER FRAME RAISED.

The mill type of direct-current motor, which has recently been put on the market by the Westinghouse Electric & Mfg. Co., Pittsburg, to meet these conditions, has been carefully designed after a conference with a large number of prominent steel mill engineers with a full knowledge of all the electrical and mechanical requirements.

The illustration shows the motor opened for removal of the armature. As shown, the motor frame is divided horizontally and is hinged, allowing the upper half to be swung back and repairs made in the minimum amount of time. The heavy section of the frame insures rigidity and freedom from vibration. The frame is provided with hand holes for inspection of the commutator and windings, but the covers fit tightly and the frame is dust-proof. The bearing housing is extended beyond the bearing and a dust-proof construction is secured by means of a steel washer and felt lining.

The dimensions of the shaft are exceptionally large with key-ways of liberal dimensions and the damages from bending and breaking are eliminated. The shaft extensions on both ends are tapered and are of the same dimensions. Thus the bore of pinions and brake wheels or hubs conform to one standard, are easily fitted securely in place and can be removed rapidly.

The bearings are particularly satisfactory because of the large amount of wearing surface which insures a long life. The air gap between the fields and the armature is large, which allows of considerable wear in the bearings before the revolving and stationary parts can rub. Special provisions have been made which prevent oil from being drawn into the armature as well as from creeping along the shaft. The bearings are split and made interchangeable for either end of the motor. No dowel pins are used, as lugs cast with the bearings keep them from turning. An eye bolt on each bearing permits of ready handling of the armature.

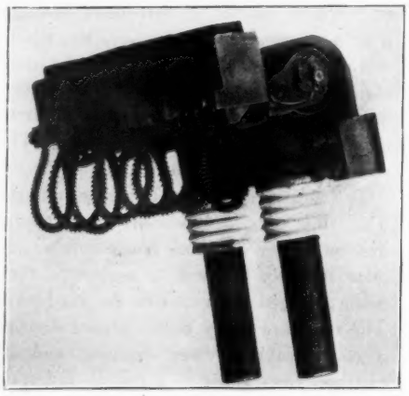


FIG. .3—BRUSH HOLDER, WESTINGHOUSE MILL MOTOR.

The commutator and brushes are constructed with a low-current density, and thus tend to reduce the heating to a minimum. The commutator is mounted on the same spider as the armature laminations, so that the shaft may be readily removed.

The carbon holder is of very substantial design, and so constructed that by the removal of one holding bolt the entire holder as one piece can be removed from the motor. The insulation is thoroughly protected from moisture and mechanical injury.

The insulation used on the motors is strictly incombustible throughout, and withstands very high operating temperatures without deterioration. Asbestos, mica, porcelain or an insulating compound is used in all cases. The coils are treated with the compound and then baked at a temperature far higher than any that will ever be met in normal service.

The armature coils are made of strap copper insulated with mica tape, hand wound. This form of coil can be easily repaired by the customer, which is not possible with wire wound coils, as they are useless if the insulation becomes badly damaged. The coils are held in place by hard fiber wedges and bands which are below the surface of the laminations. The rear end of the armature is provided with an end bell upon which the ends of the armature coils are securely banded.

Simplicity and accessibility of all parts for repair or removal are characteristic features of the motors, giving the advantage of quick changes and little loss of time. This improved design of motor is stated to have met with the approval of the steel mill engineers, and the results obtained by motors in service to have been highly satisfactory.

A PNEUMATIC ROLL-OVER MOLDING MACHINE.

The pneumatic roll-over molding machine shown in the accompanying illustrations, designed and built by the Tabor Mfg. Co., Philadelphia, solves the problem of turning over large molds and drawing the patterns on large machines of this type without the use of cranes or hoists. The flask is rolled over and the pattern withdrawn by a centrally located air cylinder.

Fig. 1 shows the machine in its normal position to receive the flask and shows a half flask rammed up ready to be rolled over. Fig. 2 shows the machine after the flask has been rolled over and delivered on the leveling device before drawing the patterns. The leveling device is shown in Fig. 5. The equalizing support is Y-shaped and insures an accurate bearing for the bottom board. A central spring in the hub of the levelling device supports the upper portion upon which the flask rests. This supporting spring holds the moving portion of the leveling device in contact with the bottom part of the flask at three points, until the spherical surfaces at the three points come in contact, when the leveling device is securely locked and held in position until the flask is rammed. When the flask is taken off the leveling device, the upper portion is raised from contact with the lower portion by the spring and is again ready to receive an irregular flask.

Fig. 3 shows the machine with the pattern drawn clean from the sand and Fig. 4 shows the pattern turned back and the mold ready for delivery. All of the foregoing operations, with the exception of ramming and clamping, are accomplished by power, by simply opening and closing the air valves.

The pattern board is equipped with a very heavy vibrator and the patterns shown on this machine have parallel sides, eight inches high. The accurately machined guides on this machine make it possible to draw deep parallel patterns without the aid of draft. The flask shown is 45 x 28 inches and 9 inches high, and weighs 650 pounds, although flasks and pattern boards weighing up to 1,000 pounds can be handled on this machine, which is well adapted for jobbing foundry use and eliminates all of the heavy manual labor on large work.

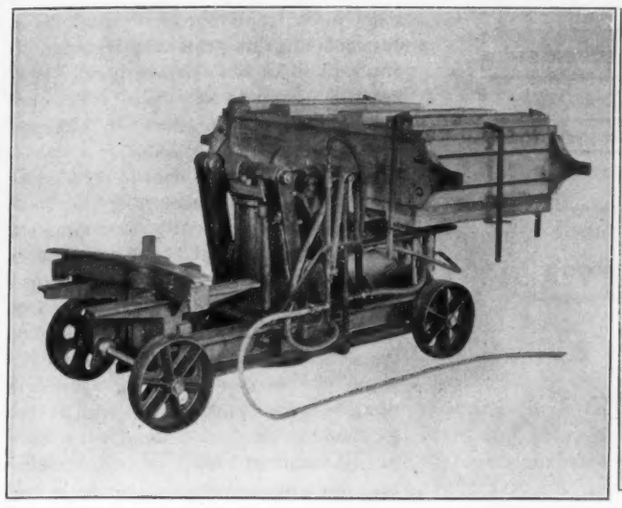


FIG. 1—TABOR ROLL-OVER MACHINE IN NORMAL POSITION

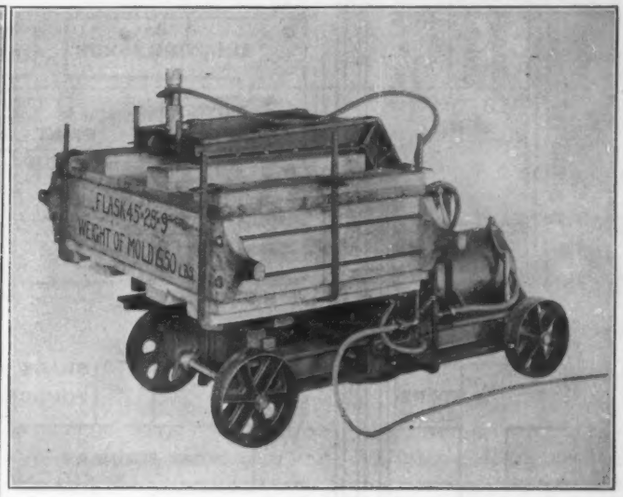


FIG. 2—FLASK ROLLED OVER AND DELIVERED ON LEVELING DEVICE

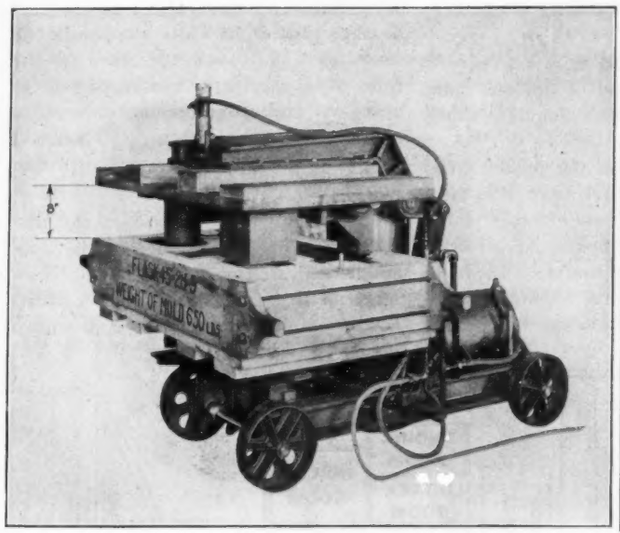


FIG. 3—PATTERN DRAWN FROM THE SAND

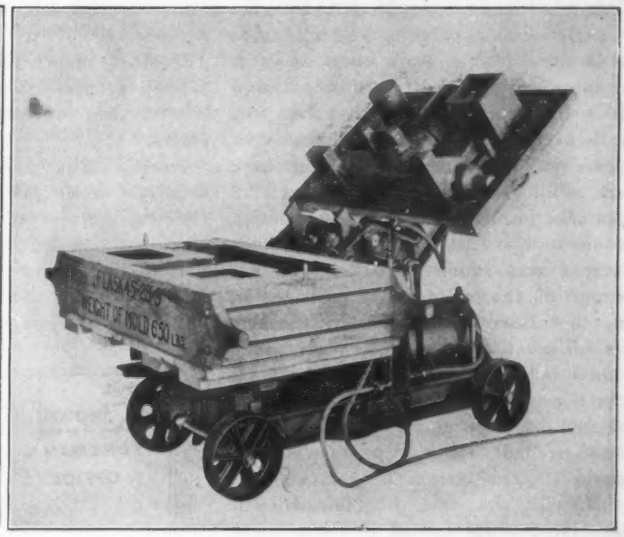


FIG. 4—PATTERN TURNED BACK

The statement of the National Lead Co. shows that its operations so far this year show a falling off of 13.4 per cent. The net earnings for 1907 amount to $2,942,245.

STORING, ISSUING AND ACCOUNTING FOR[1] MATERIAL

By Oscar E. Perrigo.

Not many years ago the store keeper might have been a laborer who could read and write, and whose duty it was to receive such articles as had been purchased, to stow them away in a more or less orderly fashion, and to issue them as they were called for, rather than to allow the workmen to come and help themselves. And there are still shops where some of the material is handled thus carelessly even now. After a time the store keeper was required to keep an account of the material he issued out, not necessarily to whom it was issued, or for what it was issued. Later, men could not get material from the store room without an order or requisition signed by a foreman specifying what was needed "for use in this department." The store keeper stamped this with the date, or "issued," and at stated times turned in these requisitions to the general office. Still he had not yet risen to the dignity of being a book keeper.

Later, the requisitions were required to bear the order number for which the material was to be used (except, of course, in the case of consumable material and supplies, such as oil, waste, etc.). The store keeper was also required to keep a debit and credit account, crediting all material received into stores and charging all issued, together with the order number upon which it was to be applied or the use to which it was to be put.

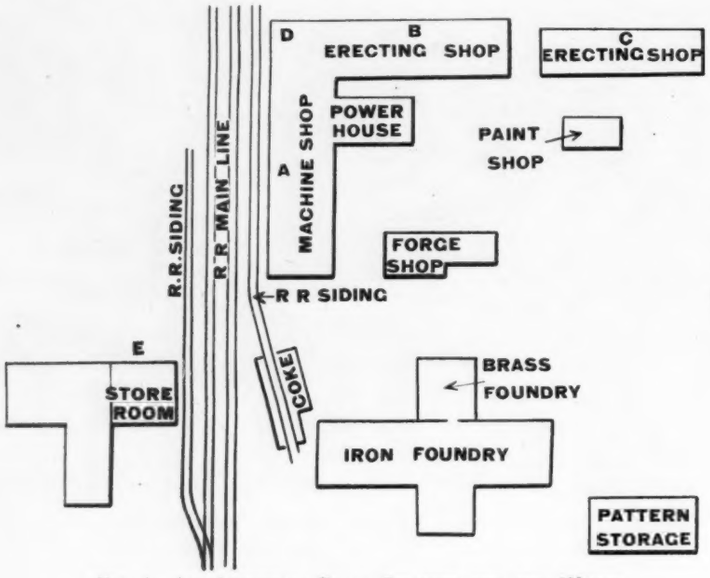


Fig. 1—An Awkward Plan Changed for the Worse.

The store keeper had now to become a book keeper instead of the one time laborer who formerly handled these stores.

During earlier years the profits were relatively much greater than now and the wastefulness of the former careless methods was looked upon as a part of the ordinary routine. In some cases these wastes undoubtedly amounted to more than the net profits of a manufacturing business of the present time. Modern methods of shop organization, shop management and the strict accounting for every item of material purchased, for its correct issue and proper use, have changed all this from carelessness to accurately known requirements, economical expenditures and strict accountability on the part of all concerned.

In discussing the question of storing, issuing and accounting for material, or as frequently denominated, "stock and material," and sometimes simply as "stores," it seems appropriate to first consider the store room itself, and its location in relation to the other departments comprising the plant. Few will realize, at first thought, the importance which the location of this department may have in the administration of manufacturing operations. But when it is remembered that from two to half a dozen men are kept busy, even in a plant of moderate dimensions, issuing these stores, some idea may be had of the number of calls that must be made each day, and therefore of the time that is spent by workmen in going to and from the store room in any event, and particularly so when it is placed at a comparatively distant point.

In locating the store room the first consideration should be to have it convenient to the workmen who draw material from it. If the plant consists of one long building, the proper point

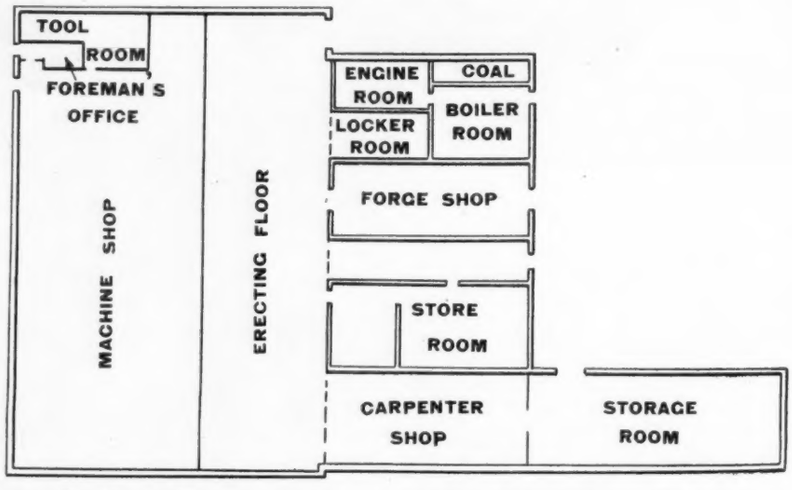


Fig. 2—A Convenient Arrangement in a Moderate-Sized Shop.

[1]Eighth of a series of articles on cost keeping and shop management.

will be near the center. If with other buildings it forms a cross or a tee, the location will be the same. If the extensions form an ell, the junction of the two buildings is the proper location. When a portion of the buildings are devoted to making the parts of machines and another to erecting, a location equally convenient to both is advisable, since considerable material, such as bolts, screws, etc., are drawn by the erecting force.

The second consideration is to have the store room convenient of access in sending material to it from the railroad cars or other similar points of receipt. This is secondary because material is received in large quantities and moved in bulk, while it is issued in small quantities that require many trips. Some have contended that the store room should be near the general office, but this is manifestly an error, since only records have to be transmitted between these points, while the actual material is concerned in all other transfers, which is a matter of vastly more consequence from an economical point of view.

To illustrate these conditions, the plan in Fig. 1, is given. In this case the buildings A and B are of three floors, and C of one floor. The store room was located on the third floor at D. This location, in plan, was perfectly logical, although the second, rather than the third floor, should have been selected. The advent of a new management brought several changes, as usual, and among them was one moving the store room to E, on the opposite side of the railroad tracks. This increased the distance to be traveled from almost every point in the shops, and in most cases made it two or three times as far; in addition to which the workmen must not only go out of the building, but cross the railroad tracks. This gave ample opportunities to the workmen to "take a walk and see their friends," of which they quite naturally took advantage, resulting in a considerable loss of time, and being for the time beyond the oversight of any foreman, did not conduce to the discipline of the force.

The wisdom shown in the location of the store room as shown in Fig. 2 is quite apparent. In passing it may also be noted that the relative location of the tool room is important, as it prevents any congestion of those going to the two points, as is liable when they are placed side by side, as is sometimes the case, and they become loitering places for the indolent. In the illustration shown the location of the store room is at once central, convenient for the receipt and issuance of material.

Fig. 3 shows a good arrangement of buildings in a general way. While the store room is convenient to railroad facilities it could as well have been set at right angles to its present position, as shown by dotted lines, and thereby rendered it considerably more convenient of access to both the machining and the erecting force. Located at A, with issuing doors opening into each of the machine rooms, would have been better, provided the issuing door of the tool room was on the erecting side.

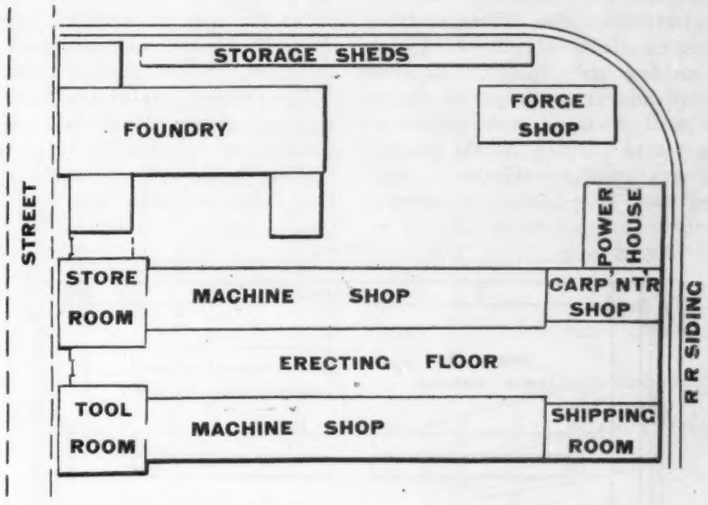


FIG. 4—A GOOD GENERAL ARRANGEMENT.

In the plan shown in Fig. 4 the machine shop has side galleries which form a second floor which is reached by stairs at each end. The store room and tool room are properly separated and each is quite accessible to the workmen who need not leave the building or the supervision of the officials. Material is received at the shipping room and at once sent to the store room on shop cars running through the erecting space. This plan has worked out well in practice.

The relative location of the store room having been determined, its dimensions must be decided. It has been sometimes said that the store room should be as large as possible. The writer once saw one that was 50 x 150 feet, in a plant arranged for about 600 men, but which usually had about half that number. The result was that one end was occupied for legitimate store room uses, while the other two-thirds soon became a junk shop, to which was sent all kinds of obsolete material, partly finished and spoiled work, and whatever the other departments wanted to get rid of. No good store keeper wants to be a junk dealer and he should not be annoyed with material that should be sent to the scrap heap.

The store room should be of ample

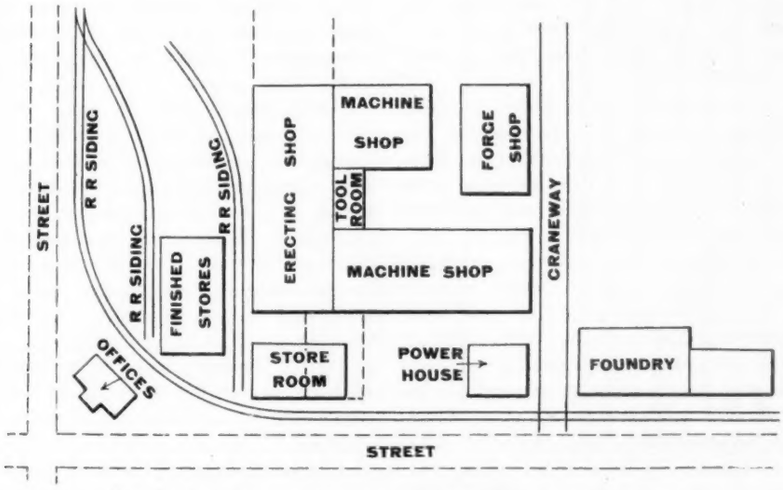


FIG. 3—AN ARRANGEMENT THAT MIGHT EASILY BE IMPROVED.

dimensions to fully meet the present requirements, as well as those that may be anticipated to develop in the future. The plan of the room should be complete from the beginning, and such benches, racks, bins, shelving, etc., may be installed and added to as they are required. In Fig. 5 is given the plan and arrangement of a store room 40 x 40 feet. It is lighted on two sides as shown. At the front is a delivery counter enclosing a space having two doors, one for entrance and the other for exit. This arrangement avoids interference, confusion and unnecessary delay in making issues. The same effect may be, to a certain extent, attained by a rail in front of a single delivery opening and counter on the line of the partition, but will not accommodate the number to be handled in a large plant. Adjoining is another door through which the material is received and through which such may be issued as needs to be sent out on trucks. In a large store room a shop track should enter at this point.

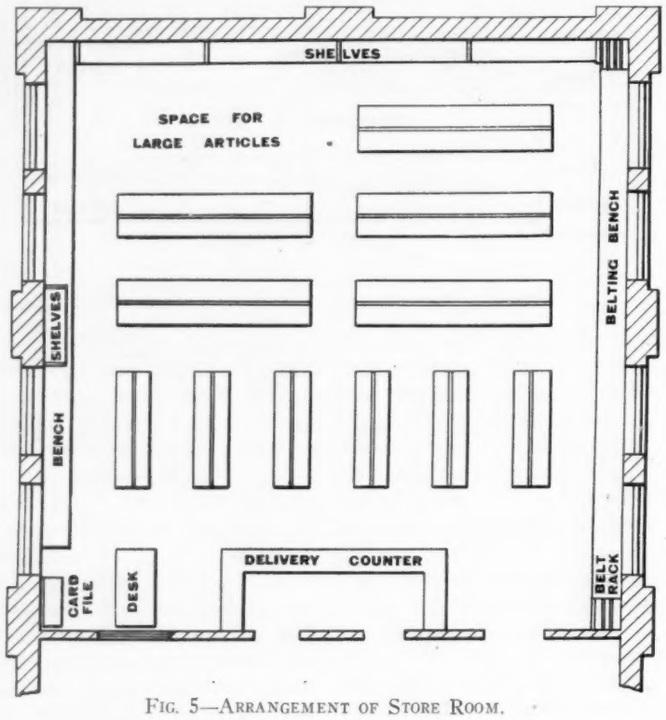


FIG. 5—ARRANGEMENT OF STORE ROOM.

On the opposite side is the desk, card filing case and such similar appliances as may be necessary. Along this side is a bench of similar height and width as those in the machine shop. Across the rear end a series of shelves occupy the entire wall space to a height of 10 feet. On the right hand side of the room is a bench like the one on the opposite side, at each end of which is a belt rack of the form shown in Fig. 6, and in which rolls of belting may be placed on gas pipe supports. In this way any width of belting that may be called for may be unrolled, stretched along the bench and measured by a scale laid off and marked upon it.

The greater part of the floor space is occupied by vertical racks or bins constructed as double cases placed back to back, and separated by passages three feet wide. The series nearest to the delivery counter are placed with their ends toward it for greater facility in reaching the contents quickly. The classes of material most frequently required will be stored in these racks. Beyond this series are others, set at right angles, so as to get as much light from the windows as possible.

The design of these racks or stacks of bins should be governed by the kind of material to be kept in them. The material of which they are made will be, to a certain extent, governed by the same condition. Many have been built of wood and have answered their purpose well. More recently they have been built up of sheet steel, held together by rods, bolts and rivets. Numerous designs are in the market which serve their purposes excellently and have an added advantage of being proof against hot fires. More storage space is secured than when wood construction is used and the first cost is not enough greater to be objectionable, while they last much longer.

For storing small castings and other similar loose material the form shown in Fig. 7 is useful. The larger materials are placed in the lower bins. The front strips offer convenient stepping places when the higher bins are to be reached. The writer has had many of them built and arranged as shown in Fig. 5, and they have been highly satisfactory.

For storing cold rolled or cold drawn steel, brass and copper rods, finished steel, brass and copper tubing, etc., a rack of the form shown in

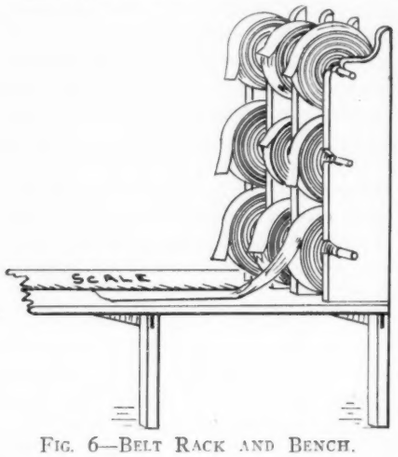


FIG. 6—BELT RACK AND BENCH.

Fig. 8 is very useful and in this case wood is a better material for the purpose than steel, for the reason that there will be less injury to the finished surfaces of the material stored. Inclined sides to the case or rack offer convenient opportunity for pins on which to hang coils of wire which would otherwise occupy wall space.

Sheet metal, vulcanized fiber, etc., is frequently stored in piles, occupying much valuable space, as well as making it inconvenient to reach the particular thickness wanted. A case like that shown in Fig. 9 is a convenient arrangement. The sides, top, bottom and shelves should be one inch thick, but the vertical divisions may be ½ inch. In the spaces thus formed the sheets are placed on edge with their ends toward the front. Different kinds, classes and thicknesses are thus separated. These cases may be set at the ends of those shown in Fig. 7, or two of them may be set back to back, to replace one of the shorter kind shown in the plan, Fig. 5.

Fig. 10 shows a case with inclined shelves which are furnished with sheet iron pans, which may be of any required dimensions, ordinary baking pans being frequently used for holding small machine parts, or different

classes of material received and stored in loose form. These pans are in most cases as convenient and more economical than drawers, and are as readily removed for emptying and filling. The arrangement is as flexible as a card index system, as when a certain class of material or machine parts have been stored in an allotted number of bins, the number may be increased or diminished, or the whole easily removed to another case, if a re-arrangement is necessary. The shelves are inclined so that their contents may be readily seen, and a small strip retains them in place.

Articles should be so stored as to avoid needless labor to keep them in

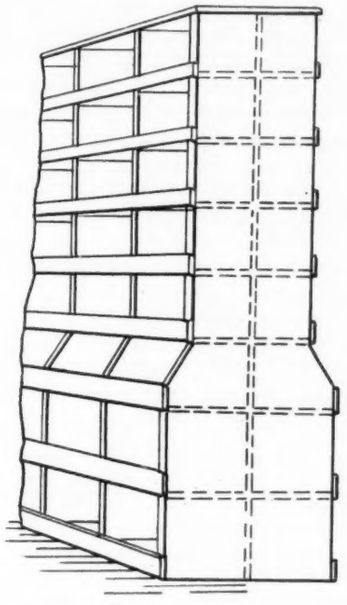


FIG. 7—WOODEN BIN FOR CASTINGS, ETC.

good order, and convenient for issuing. The following hints may be useful, particularly in planning a new store room. All small articles that are received in boxes or packages by the gross, dozen or hundred should remain in the original packages and be stored on shelves. The shelves will also be the proper place for emery cloth, sand paper, paint in cans, and all similar articles. Shelving is the most economical form of store room furnishings and should be utilized whenever possible. The shelves may extend up to the ceiling. Articles seldom wanted should be placed near the top, and may be reached by a light ladder that may be set aside when not in use. Oil should be run off into cans holding a barrel. Rods and tubing should be kept in a case (Fig. 8), rather than on a rack, as in the blacksmith shop, in which case the material will be marred and bent.

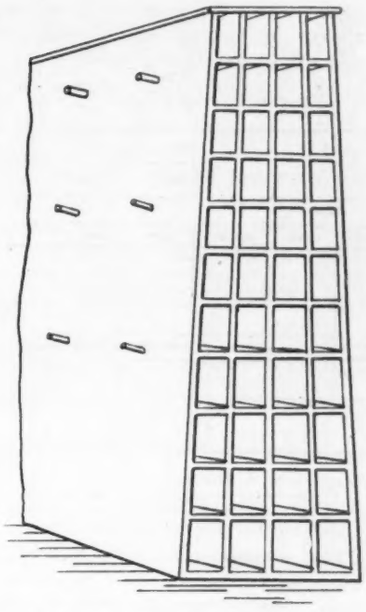


FIG. 8—RACK FOR RODS, TUBING, ETC.

Different grades of steel should be indicated by painting the ends of the bars different colors. Lampblack must be kept in a covered metal can on account of the danger of spontaneous combustion. Cotton waste should be kept in a box near the point of issue, with a scale within convenient reach for weighing it. Grain emery should be in tight tin cans holding about 50 pounds. Many articles such as kegs, boxes, etc., may be stored under the benches, and small articles, frequently called for, under the delivery counter.

Broadly considered, "stock," "material," "stores," as they are variously

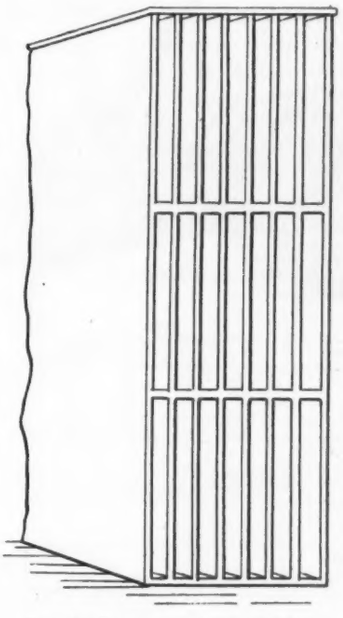


FIG. 9—RACK FOR SHEET STOCK.

denominated, may be divided into two general classes, first, "rough stock," sometimes called "crude stock," and second, "manufactured stock;" although in reality there may be said to be seven classes, namely: (a) that which is stored in yards, as pig iron, scrap iron, coal, coke, molding sand, lumber, etc.; (b) that usually stored in warehouses, as large bars, heavy sheets, steam, gas and water piping, heavy castings, forgings, and similar purchased material; (c) that handled in the shop store room, as cold drawn and cold rolled bars, sheets, tubing, wire, etc. Of manufactured stock there may be: (d) finished parts purchased, as bolts, nuts, screws, etc.;

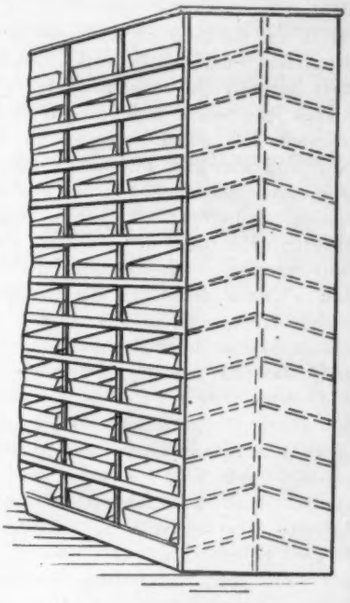


FIG. 10—RACK AND SHEET IRON PANS.

(e) consumable supplies, as oil, waste, files, emery cloth, etc.; (f) purchased tools, as drills, reamers, wrenches, etc.; (g) finished machine parts, as partly finished parts, completely finished parts, and assembled groups of parts. It should be here noted that in some plants finished parts of machines, being classed as product, are provided for in a finished parts store room, or as sometimes called, "finished stores." It would seem to be logical to thus separate this class entirely from the supply store room from which only "stock, material and supplies" are to be issued. It is also the case that in many establishments all articles that may be strictly classed as tools, are stored in the tool room. This is encroaching on the purposes of the store room. The tool room should only hold and control these tools after they have been regularly

issued from the store room and charged to the shop.

With the exception noted as to finished parts of the product, all stores, that is, all material of whatever kind, purchased for use in the works, should, either actually or constructively, pass through the store room; should be receipted for when received in the plant and charged out when issued for use, without regard to its physical location, whether in yards, warehouses, departments, or the store room proper. This receipt will be upon a blank furnished by the purchasing clerk, and is one of the duplicates of the original purchasing order. Material will be accounted for on a stock ledger card, as shown in Fig. 11, a separate card being used for each article. These are properly classified and filed in card drawers supplied with sub-class guide cards. Material received will be entered in the first columns, and the amounts issued in the succeeding columns. These columns being footed up, the amount of the latter may be subtracted from the former, and thus at any moment show the stock on hand. Thus used these cards become a perpetual inventory. The amounts shown should be verified from time to time by actual count or weight, as the case may be. It will be noticed that at the top of the card the minimum and maximum quantities are shown, between which the stock on hand should always be maintained, by timely notice to the purchasing clerk, or to the production order clerk in case the article is to be made in the plant. These departments should keep the store kepeer informed of the probable time required to obtain the different classes of goods.

ARTICLE — STOCK LEDGER CARD — MIN. — MAX.

RECEIVED		ISSUED								
DATE	AMOUNT	DATE	AMOUNT	DATE	AMOUNT	DATE	AMOUNT	DATE	AMOUNT	TOTAL
TOTAL		FORWARDED						TOTAL		

FIG. 11—STOCK LEDGER CARD, 4 x 6 INCHES.

A number of methods have been devised for determining the minimum and maximum quantities of stock that should be kept on hand. Some of these have been very complex and highly technical, while others have been the most ordinary kind of "guess work." The best plan will probably be found somewhere between the two. It is more than likely to consist of notes made from actual issues during certain periods, and considered in connection with the time required to obtain or to make the articles after being called for, and their relative cost. Thus, if we are issuing 1,000 pieces of a certain article each month, and it requires three weeks to obtain a supply, we should not fix the minimum at less than 1,000. The maximum may be between 2,000 and 3,000. The cost will be a factor in determining the maximum. Cheap goods may be ordered in larger quantities to avoid the excessive shipping and office expenses attending small orders. Expensive goods should be carried on a closer margin, so as not to tie up an unnecessary amount of capital in them. The purchasing clerk's argument as to the state of the market should be taken into consideration. He can buy certain materials at a better advantage at one time than another. At the same time he must consider that if the goods are kept on hand too long his saving in price may be eaten up in interest.

When the stock is to be replenished by purchases the store keeper will fill out a "Requisition for Purchase" card of the form shown in Fig. 12, and send it to the superintendent's office for approval, after which it will go to the purchasing clerk, who will order the goods from the dealer, fill in the blank spaces on the lowest line and return it to the store keeper, who will file it next to the stock ledger card for the same article. When the goods are received he will make the proper entry on the latter and file the requisition for purchase card for reference in a separate drawer. This card is the same as that used in all departments for similar purposes. If made by any authority other than the store keeper it will be returned by the purchasing clerk to that authority for information, after which it will be sent to the store keeper and handled the same as if originally made out by him.

REQUISITION FOR PURCHASE

NO. — DEPT. — DATE

QUANTITY	DESCRIPTION

FOR ORDER NO.	DATE WANTED
REQUIRED BY	APPROVED
ORDERED FROM	DATE ORDERED / DATE EXPECTED

FIG. 12—REQUISITION FOR PURCHASE CARD, 4 x 6 INCHES.

REQUISITION FOR MATERIAL

NO. — DEPT. — DATE

QUANTITY	DESCRIPTION	VALUE

FOR ORDER NO.	
APPROVED	DATE ISSUED

FIG. 13—REQUISITION FOR MATERIAL AND SUPPLIES, 3 x 5 INCHES.

A similar card headed "Requisition

for Stock" will be used when the article is to be made in the plant. In this case the lower line will show what department is to furnish the stock, or if more than one department is included, then the principal one. The card will be sent to the production order department or clerk, who will issue the proper production orders for the work. He will fill out the last line on the requisition card with the date ordered and date expected and return it for information to the store keeper. These cards will be used by all departments requiring stock to be manufactured, and do not become operative until approved by the superintendent.

MATERIAL RETURNED

NO. FROM DEP'T.

QUANTITY	DESCRIPTION	VALUE

TO CREDIT OF ORDER NO.

RECEIVED IN STORE ROOM	CREDITED

FIG. 14—MATERIAL RETURNED CARD, 3 x 5 INCHES.

All material will be issued on requisitions approved by a foreman or some higher authority. A card for this purpose is shown in Fig. 13. These are put up in blocks, alternating with similarly printed sheets of paper. The requisition is filled out on the paper and a carbon copy made on the card. When the material is issued by the storekeeper he retains the card, enters on it the date issued and the value of the material, after which he sends the card to the cost clerk. In filling out these cards the order number is always entered if the material is of such a nature that it should be charged to an order. If for any other use the words "Order No." will be erased and the purpose briefly specified.

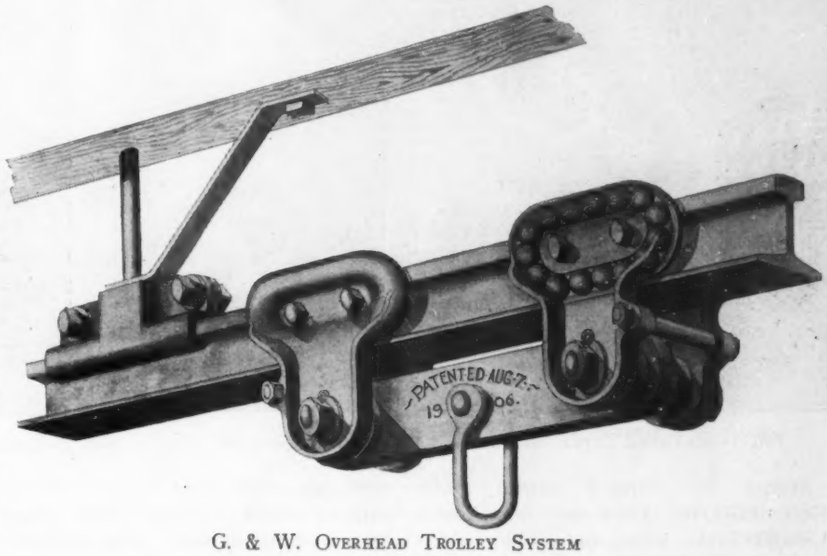
Material drawn in excess of an order, or for any reason on hand in the shops, will be returned to the store room with a "Material Returned" card, as shown in Fig. 14. In filling out this card the credit should be given to the order number, or other purpose, for which it was originally drawn from the store room. The store keeper will enter the date received and value of the material, and send the card to the cost clerk, who will make the credit, date the card and file it for reference. The store keeper will also enter the material on the proper stock ledger card the same as if it was received by purchase. This will not operate as a double receipt of the same material since it is not reported to the purchasing clerk and the purpose of the stock ledger card is simply a current inventory account.

In this article all store room duties are mentioned as the store keeper's duties. When several men are employed under him it should be understood that these duties are distributed as usual among the number. Thus he may have a stores ledger clerk, a receiving clerk, an issuing clerk, and one or more laborers. Each of these will have his regularly assigned duty. Therefore the directions herein contained have been set out as the store keeper's duty, which while he may assign them to his subordinates, he remains personally responsible for, and in the absence of such assistants he must assume the duties as given.

The Milwaukee Lock & Seal Co., Milwaukee, has filed an amendment reducing its capital stock from $15,000 to $10,000.

A BALL TROLLEY SYSTEM.

An overhead trolley system in which the trolley runs on balls instead of wheels is being introduced to the foundry trade by the patentees, the G. & W. Mfg. Co., 26 Cortlandt street, New York City. Among the advantages enumerated for this system is the ease with which it can be erected, and does not require the drilling of holes, the work consisting merely of securing the lag or machine bolts in the overhead supports and the fitting of the clamps around the bolt head and the head of the rail. By bolting these clamps firmly together, the joints between the rails are given a perfect, non-slipping juncture over which the trolley will travel smoothly. The two sides of the trolley open considerably toward the top, thereby giving room to pass the slight obstruction of the clamps without difficulty, and the same plan is followed with the ordinary wheel trolley, which can be used in place of the ball trolley shown in the illustration. Switches and turntables can be supplied with this system.



G. & W. OVERHEAD TROLLEY SYSTEM

WORK MORE HOURS.

Worcester, Mass., May 2—The capacity of the shops of the American Locomotive Co., Manchester, N. H., has been largely increased by receipt of a large amount of heavy machinery from the Providence, R. I., shop of the company which is now being dismantled and the machinery distributed among the other branches of the company.

Following closely on similar action by the motive power department, the car department of the Boston & Maine repair shops, Lyndonville, Vt., have resumed working full force four days per week. For the last six weeks, they worked one-third time; now it is two-thirds time.

DEVELOPMENT OF CURTIS TURBINE BUSINESS.

A number of interesting facts are revealed in the statement of Curtis turbine sales which follows.

CURTIS TURBINE ORDERS TO DEC. 31, 1907.

Orders to Dec. 31, 1907.	Number of plants. Capacity, 1,000 K.W. and less.	Capacity, above 1,000 K.W.	Total number of plants.	Average capacity of plants. K.W.	Total capacity. K.W.
Central station and railway traction	71	190	261	3,778	986,020
Industrial plants and miscellaneous	243	45	288	305	87,675
Totals	314	235	549	1,956	1,073,695
	Number of machines.	Average capacity per machine, K.W.			Total capacity, K.W.
Installations to Dec. 31, 1907	943	857			807,610
Orders on hand Dec. 31, 1907	153	1,739			266,085
Total sales to Dec. 31, 1907	1,096	980			1,073,695
Orders for fiscal year ending Feb. 1, 1908	325	890			286,320

The most noticeable single item is the total capacity sold to Dec. 31, 1907, 1,073,695 kilowatts or about 1,556,000 brake horsepower. This is a strong indication of the advance of the steam turbine generating unit. That this advance is accelerating rapidly is shown by the amount of the sales of Curtis turbine generators for the past fiscal year of the General Electric Co., 286,320 kilowatts capacity, or more than 25 per cent of the total sales since the Curtis turbine was introduced.

Another fact of considerable interest is the large number of plants for which the Curtis turbine has been selected as prime mover. The large range of sizes in which this turbine is sold is probably responsible for the great variation in average sizes of plants in which it is used. The large central stations and electric traction enterprises with an average size of 3,778 kilowatts plant capacity strikingly differ from the industrial plant of 305 kilowatt average capacity.

The next convention of the National Machine Tool Builders' Association will be held at Atlantic City, May 19 and 20, with headquarters at the Hotel Chalfonte.

A MACHINE FOR REAMING AND TAPPING HEATER SECTIONS.

The accompanying illustrations show a special machine designed to ream and tap the sections used on hot water heaters, such as are built for residential use. These heater sections, which are shown in position on the machine in some of the accompanying illustrations, have three holes, on each of the flat surfaces, which holes have to be bored and reamed to a neat fit. The holes are tapering and when finished receive a taper bushing, which tapers both ways and forms a joint between the sections. As all three holes must be drawn up together, it is essential that the work be accurately done.

Fig. 1 shows the method by which this is accomplished. A section similar to that shown at the left of the illustration is placed on the round table of the machine and clamped into position over centering bushings. The table is mounted on ball-bearings, enabling it to be easily swung from one hole to the next. The three holes are placed equal distances from the center of the table, so that it is only necessary, after setting up the machine, to revolve the table to the successive positions. Both top and bottom holes are bored at one setting. The boring bar is then removed and the top hole reamed tapering. These operations

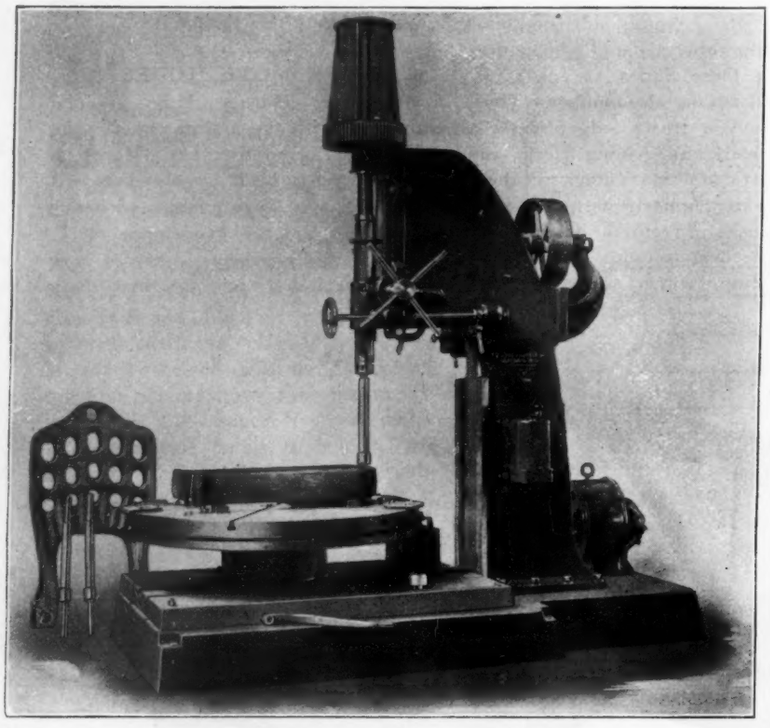


FIG. 1—REAMING TAPER HOLE IN SIDE OF RADIATOR SECTION.

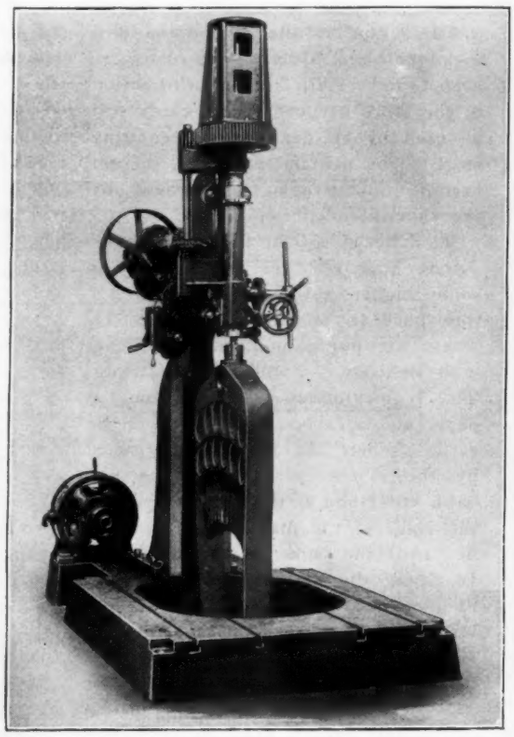


FIG. 2—REAMING TAPER HOLE IN TOP OF RADIATOR SECTION.

are performed on a lot of sections, and then taper centering bushings, which fit the taper reamed holes are placed on the round table and the fitting is dropped over these and the top side holes reamed tapering.

In addition to the taper reamed holes, there are holes in the top and edges of the machine which require tapping. The method of performing these operations is shown in Figs. 2 and 3. The illustrations show the work in position, but do not show the jigs which are used for holding it. A novel feature of the machine is in the construction of the base, which is made with a pit 40 x 56 inches and arranged to be covered when using the round table. The machine may be furnished with a small round table on the base for boring or tapping the sections of round boilers.

This tool is built in two sizes, either of which may be belt or motor driven. The machine shown in Figs. 1, 2 and 3 is belted direct from a variable speed motor, and will carry an 8-inch pipe tap. The photograph, Fig. 4, shows a heavier machine belt driven. These tools are built by Baker Bros., Toledo, O. The following table gives the principal dimensions of the machines:

SMALL MACHINE, FIGS. 1, 2, 3.	
Floor space	11 ft. x 5 ft. 6 in.
Height over all	10 ft. 7 in.
Vertical adjustment of spindle	20 in.
Feed changes	20
Distance, center of spindle to center of column	24 in.
Horsepower	5

LARGE MACHINE, FIG. 4.	
Floor space	11 ft. x 5 ft. 6 in.
Height over all	10 ft. 3 in.
Vertical adjustment of spindle	18 in.
Feed changes	20
Distance center of spindle to center of column	25 in.
Horsepower	7½

DUTY ON DIAMOND DRILL CARBONS.

The Sullivan Machinery Co., Chicago, the large manufacturer and operator of diamond drilling machinery, has been taking a leading part in the contest waged against the 10 per cent ad valorem duty now being exacted on importations of black diamonds or carbons for use in diamond drill operations. Concretely, the above company has been fighting a test case in which it became the plaintiff as the result of a direct shipment of carbons from England. Ordinarily the diamonds are handled through brokers at New York who sell to the various mining and exploring companies, and the question, therefore, is one of importance to all these numerous buyers, as the price of the carbons to the user is directly affected to the extent of the duty.

The carbons, as they come naturally to the market, are irregular in size, but some of them—a fair proportion of the whole—are suitable, without further handling, for use in the drills. Others are too large and must be broken. Prior to the regime of the present customs official, carbons broken abroad were admitted free, as were the naturally proper sized carbons. The present officer, under an interpretation of the regulations referring to precious stones, has placed the 10 per cent duty on these broken stones, maintaining that the value of the stones so broken has been increased thereby and that, therefore, they are dutiable.

The portion of the regulations about which there is the dispute refers to stones free from duty, and states that, among such, are carbons for diamond drilling and stones not increased in value. The question hinges, therefore, on whether carbons not of suitable size in their natural state are enhanced in value by the mechanical breaking of them.

The Sullivan Machinery Co. is maintaining that the value is not increased, citing the fact that agents selling carbons have always offered them to the buyers at a flat price per karat in lots which contain natural and broken stones and from which the purchaser might choose any stones at random. Since the imposition of the duty, the diamond brokers have imported all their carbons in the natural state, breaking, themselves, such stones as required it, thus avoiding the duty. This situation places the brokers in a position to charge the consumer the 10 per cent additional in the price on both natural and broken carbons and

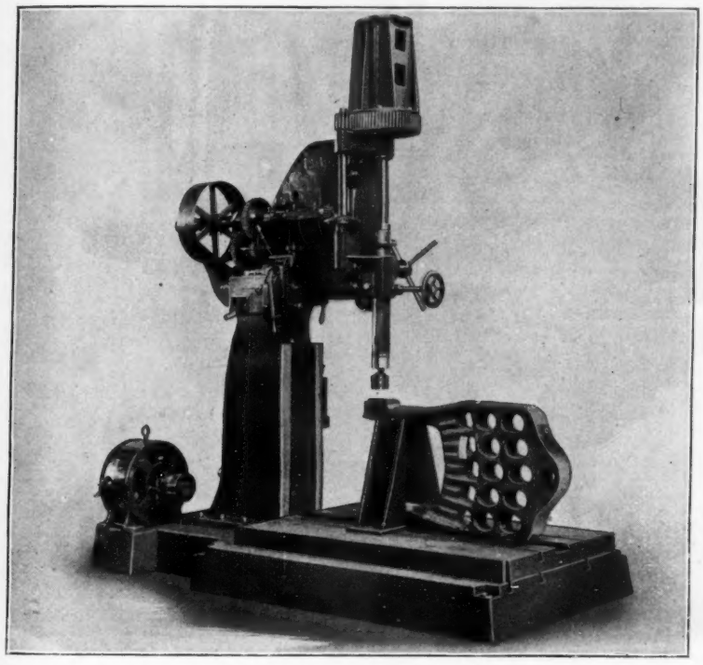


FIG. 3—REAMING TAPER HOLE IN ENDS OF RADIATOR SECTION.

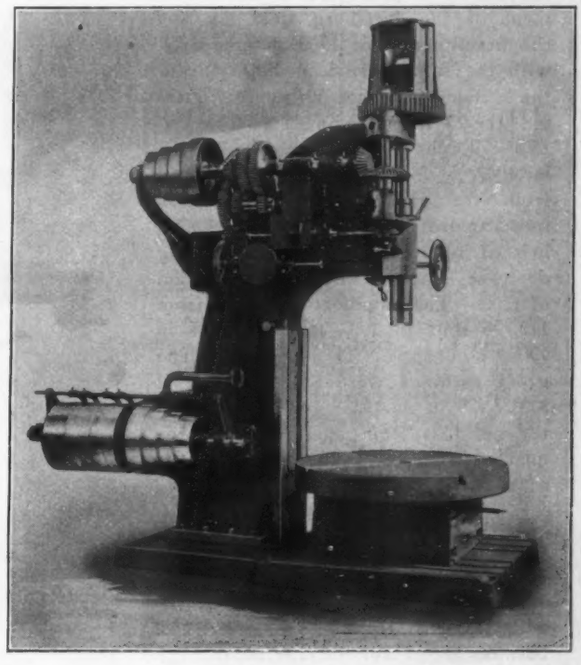


FIG. 4—HEAVY MACHINE FOR REAMING AND TAPPING RADIATOR SECTIONS.

the imposition is naturally being defended by them.

If the broken stones are increased in value by the breaking and at the same time sell here at the same price as the natural carbons they must necessarily have been less valuable before being broken. But this can scarcely be conceded in view of the fact that the carbons are bought abroad in original parcels at a flat price per karat in which no distinction is made between stones already suitable for use and those which must be broken before using in the drills. It remains to be shown just where the increase in value becomes evident. The matter is now in the hands of the general appraiser and a decision is expected soon.

STRIKING DECREASE IN FUEL CONSUMPTION.

An indication of the extent of the present depression in industrial lines, from the amount of the fuel being consumed, is presented in the statement of the Pittsburg Coal Co. for the first quarter of 1908 as compared with the same period in 1907. From the Pittsburg district during this quarter there were shipped a total of 2,704,873 tons of coal, against 3,637,163 in 1907, a loss of 932,290 tons; and from the Hocking district, 205,599 tons, against 219,715 tons in 1907, a loss of 14,116 tons. A more striking decrease is shown in the consumption of coke. The shipments declined from 113,796 tons in 1907 to 2,648 tons in 1908, a drop of 111,148 tons. The gross earnings were $515,992, against $1,025,429, a decrease of $509,437, and the net loss from operations for the quarter, $125,388, against net earnings of $327,329 in 1907.

Thermit Branch at Toronto.—The Goldschmidt Thermit Co. announces the establishment of an office and works at 103 Richmond street, W., Toronto, Canada. The new branch was opened for business May 1, and is under the management of E. C. Rutherford, of Toronto. Mr. Rutherford is a Canadian by birth, and has a wide acquaintance among the business men of the dominion, having been for several years the manager of the Magann Air Brake Co., and of the Canadian Brake & Supply Co. A complete stock of Thermit and appliances will at all times be carried at Toronto, and the branch organization will be in a position to execute promptly, the welding of heavy steel sections, such as stern posts of steamships, crankshafts, etc., as well as trolley rails in paved streets, motor cases, and other broken steel sections. A fully equipped repair shop will be in operation for the repair of steel castings up to 1,000 pounds.

A HORIZONTAL ATTACHMENT FOR A VERTICAL MILLER.

The advent of the vertical milling machine was followed by the vertical spindle attachment for the horizontal type of machine. Now in turn follows a horizontal attachment for a vertical miller. As designed by the Becker-Brainard Milling Machine Co., Hyde Park, Mass., and illustrated herewith, this attachment bolts to the lower end of the sliding hood concentric with the spindle.

The attachment shown in Fig. 1 consists essentially of two parts, the upper which is stationary, and the lower which may be revolved in a horizontal plane beneath the upper. Graduations upon the surface of the latter permit of accurate adjustment of horizontal spindle to any angle; T headed bolts in T slots lock it in place. The horizontal spindle, supported at both ends, carries a bevel gear, which is driven by a corresponding gear with taper shank inserted in the vertical spindle. End play on the horizontal spindle is taken up at one end by nut and check nut, while at the other end provision is made for securing a cutter, either by key and clamping nut or by insertion of taper shank in the end of the spindle.

At the intersection of the center lines of the horizontal and vertical spindles may also be inserted a cutter for general use, but specifically for cutting spirals. This is held between two nuts, one of which is graduated at that adjustment; having once been made for any given thickness of cutter, it may be duplicated for the same cutter.

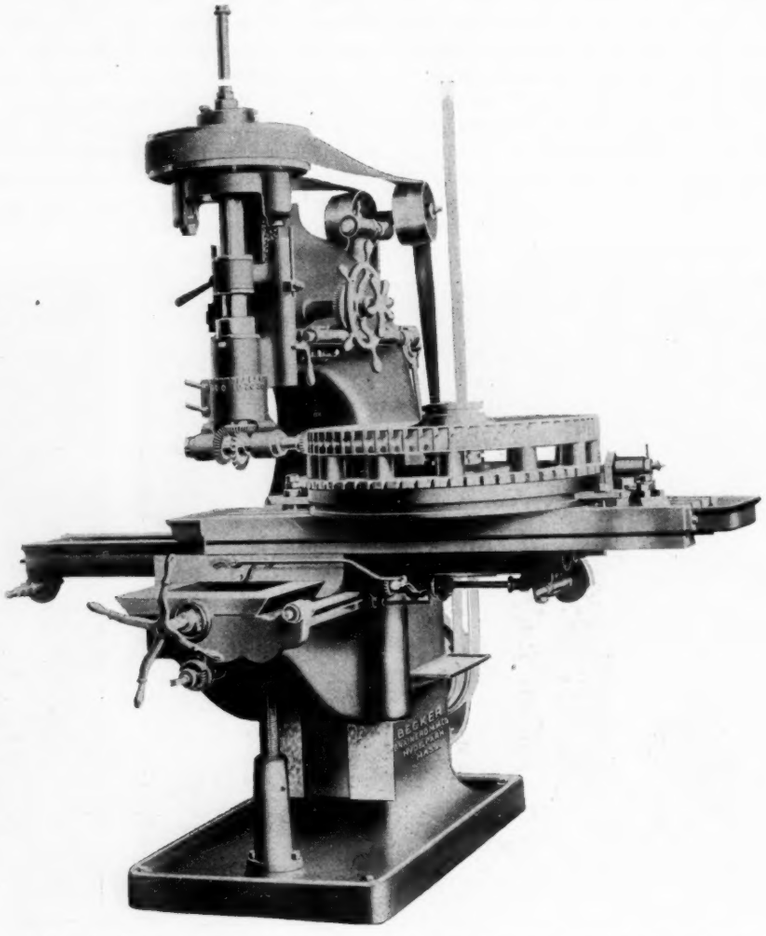


FIG. 1—BECKER-BRAINARD VERTICAL MILLING MACHINE WITH HORIZONTAL MILLING ATTACHMENT.

Manifestly this attachment materially increases the scope of the vertical miller. It gives it the same range as the horizontal type in the cutting of worm and spur gears, spirals, hobs and racks, while it retains other characteristics peculiarly its own.

A practical application of the horizontal attachment of slightly different construction is shown in Fig. 1 in connection with a No. 6 Becker-Brainard vertical miller. Here it is utilized

for cutting the axial buckets in a Sturtevant steam turbine disc. This disc is mounted upon and clamped to a circular slotted-edge jig plate which revolves freely about a pin projecting from a circular base plate which is securely clamped to the platen. The diameter of the pin is the same as that of the turbine shaft; the slots in the jig plate correspond in number and spacing to the buckets to be milled in the disc. A spring pawl or pin holds the ring in place as each bucket is being milled. The vertical type of machine presents the advantage of great distance between the neck and the center of the vertical spindle which in this case gives ample room for the disc, which is 26 inches in diameter.

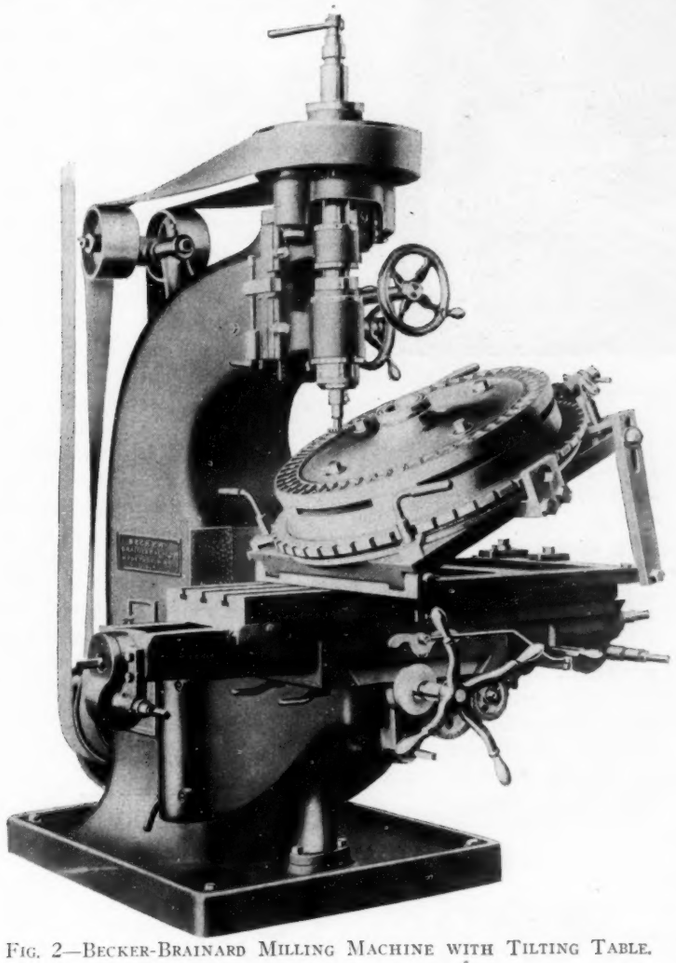


FIG. 2—BECKER-BRAINARD MILLING MACHINE WITH TILTING TABLE.

For the milling of the radial bucket disc, Fig. 2, the engine rig is mounted on a tilting plate of skeleton construction attached to the platen of the machine; the upper portion being hinged so that it can be adjusted and locked at any angle. Subject to the action of adjustable stops the cutter is fed to cut the bucket recesses at an angle out of the solid forging.

HOISTING ENGINES AT NEW JERSEY ZINC CO.'S PALMER SHAFT.

The New Jersey Zinc Co., New York City, is operating its skip at Palmer shaft, Franklin Junction, N. J., with two Allis-Chalmers 22 x 48-inch duplex direct-acting double drum Corliss hoisting engines. These engines equipped with non-releasing valve gear, drive a double drum 10 feet in diameter and 5½ feet across the face, and are used to lift a total load of 20,000 pounds up an incline of 47½ per cent, from a vertical depth of 1,050 feet, with steam pressure of 140 pounds per square inch. The load is made up as follows: Ore, 10,000 pounds; skip, 6,000 pounds; rope, 4,000 pounds. The engine is fitted with parallel motion post brakes and Stephenson link motion reversing gear, with one drum keyed to the shaft and the other driven by Allis-Chalmers improved friction clutch. These parts are operated by auxiliary steam engines with oil controlling cataract cylinders actuated from the operator's platform by means of an improved floating lever device, except in the case of the clutch engine, which will have a positive motion up and down.

The main engine frames conform to the heavy duty pattern. The brake wheel is 12 feet in diameter and the brakes are set by a weight and released by steam. The total weight of the hoist is approximately 250,000 pounds. The clutch engine has cylinders 7 x 8 inches, the brake engine and the reverse engine 6 x 18 inches.

A SPECIAL ADJUSTMENT FOR MILLING WORK.

The accompanying illustration shows a double vertical spindle milling attachment, which the Kearney & Trecker Co., Milwaukee, has devised for special work. The general arrangement of the device is clearly shown in the photograph, Fig. 3, and the drawing, Fig. 2. The device is driven from a pair of spiral gears on the main arbor of the miller. These are larger in diameter than the spiral gears on the vertical spindles, making it possible to use an angle on the spiral gears, which is extremely favorable for a drive of this type. The angles chosen were 54 degrees for the driving gear and 36 degrees for the driven gear. The work to be milled is chucked and the table fed to the left. The work in this particular case has a shoulder, as is shown by the sketch, Fig. 1. For this reason the spindles were designed to revolve, one left hand and the other right hand, so that both cutters would be running against the shoulders A, Fig. 1. It was required that the distance B should be maintained at some fixed standard on account of the interchangeability required on the pieces to be machined. This distance was to be regardless of the wear of the cutters, and therefore, a little side adjustment was provided by means of the screw clearly shown in the drawing and photograph. This fine adjustment, after the machine was once set up amounted to ¼ inch, although it is evident that this could have been greatly increased, by furnishing a spiral gear on the arbor to take its end thrust against the bearings in the housing instead of against the arbor itself. This would necessitate the

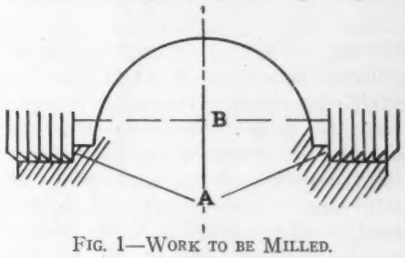


FIG. 1—WORK TO BE MILLED.

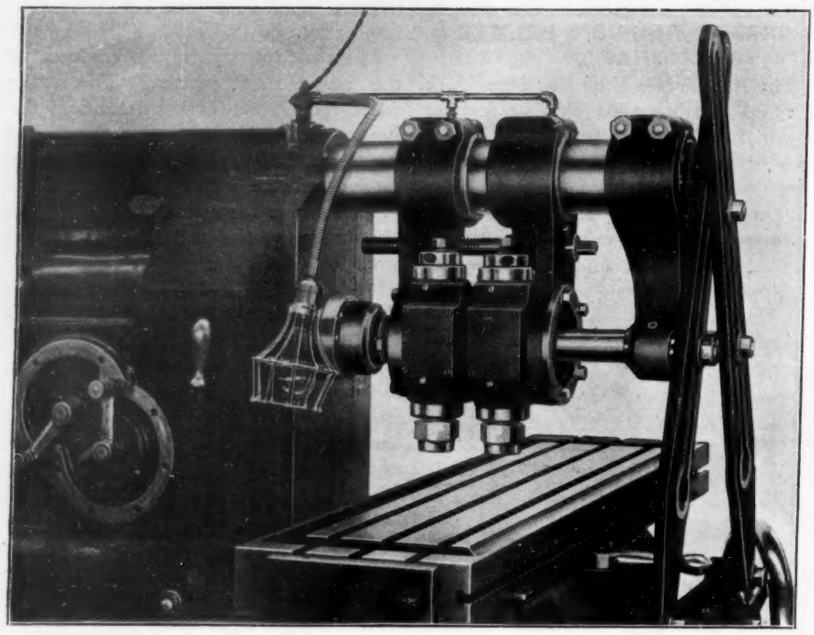


FIG. 2—VERTICAL MILLING ATTACHMENT FOR KEARNEY & TRECKER MILLER.

leaving of the arbor without arbor collars. The casting containing the spindle bearings was made separate from the piece that clamps around the arm on account of the convenience in setting the spindles square with the table top. The cutters and arbors used in these spindles have straight shanks and are backed up by the screws shown in the hollow spindle. This permits the slight vertical adjustment of one cutter in order to bring them on an exact level when so desired.

The photograph also shows the lighting system used on milling machines by the Kearney & Trecker Co. This is an ordinary piece of Almond tubing used for the purpose. The tubing screws into a small casting and permits the light being brought into any desired relation to the work.

What is claimed to be the first electric furnace for the production of steel in Belgium is approaching completion at the works of the Societie des Acieries Liegeoises, at Brussels. It is of the Kjellin-Roechling type.

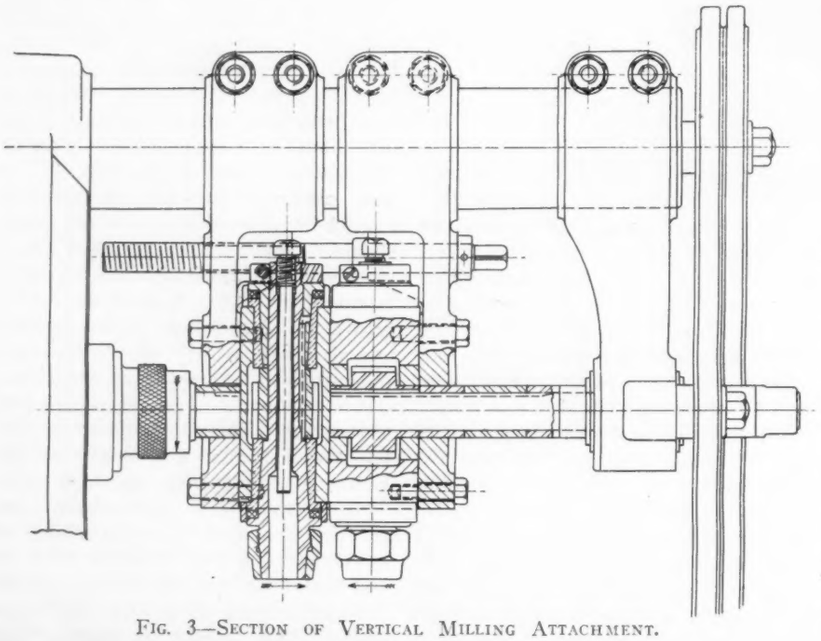


FIG. 3—SECTION OF VERTICAL MILLING ATTACHMENT.

A CUPOLA DEMONSTRATION.

Arrangements have been made by J. de Clercy, agent for the Societe Anonyme d'Exploitation des Brevets Cubilot A. Baillot, of Montreal, Canada, to exhibit a cupola in operation in connection with the convention of the American Foundrymen's Association and the exhibit of the Foundry Supply Association to be held in Toronto, June 8-12. This cupola is now being erected in a temporary building adjoining Machinery Hall. The blast for the cupola will be furnished by one of the new Sturtevant turbine blowers operated by a steam turbine. A novel feature of the installation is that the exhibitors expect to put on the blast in the morning and to pour iron for an hour and then to bank the cupola for two hours during lunch time. Later it will be running in the afternoon for two hours or more. The principal point to be demonstrated is the possibility of furnishing a small amount of iron continuously for a long period with only a moderate consumption of fuel and also the possibility of starting and stopping the cupola at will. The agent guarantees to pour very thin, light work and arrangements have already been made for pouring a large number of molds for light, delicate castings. This demonstration will be unique and of great interest to many foundrymen.

LAKE SUPERIOR MINING NOTES.

The opening of the new channel for the Sturgeon river around the Loretto mine will be completed, it is expected, about July 1. More rapid progress has been made than was anticipated. The future operations of the mine will probably require the sinking of another shaft and considerable drilling has already been done over toward the old Appleton property, which is now a part of the Loretto, in preparation for the extensive development of the mine in that direction.

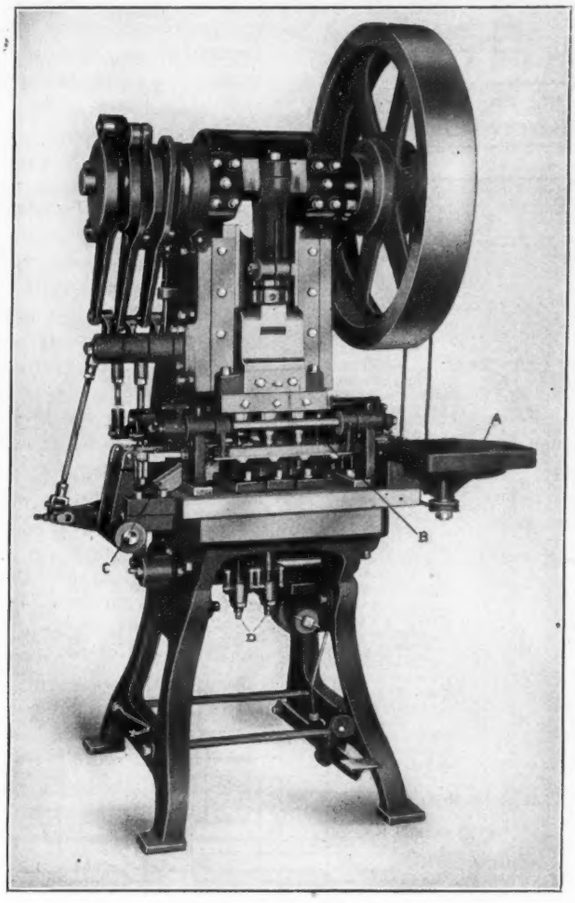
The new shaft of the Calumet mine, operated by Pickands, Mather & Co., is down to a depth of 80 feet, which is a little more than one-third of the way. While the shaft will be finished by mid-summer and the opening of the ore body could easily be accomplished in time to get out ore this season, it is understood that none will be shipped.

BLISS AUTOMATIC GANG PRESS.

The accompanying illustration shows a new special automatic press recently built by the E. W. Bliss Co., 8 Adams street, Brooklyn, N. Y. It was designed and built for performing at each stroke simultaneously, the second, third and fourth operations on shells on which the first operation of cutting and forming, or partly forming, has previously been done in another press. This type of press is especially adapted for a wide range of small articles made from sheet brass, tin copper and aluminum. The operation of the machine is entirely automatic, the drawn shells on which the die operations are to be performed are laid on the revolving friction dial A, right side up. This continually revolving dial is driven by a belt from a groove cut in the hub of the flywheel, and carries the shells up to a stop from which they are automatically released, one at a time, and gripped by the lateral feed B which places the shell in position under the first operation die, after which operation it carries the shell from this die through the subsequent operations finally discharging it into the chute C whence it falls into a receptacle conveniently placed to receive the finished article. After the first three revolutions a finished blank is produced at each stroke of the press.

The lateral feed is operated by means of cams on the end of the crank shaft through the medium of connecting levers and cranks shown on the side of the press. The positive knockouts D for the dies are operated in the same manner. The main slide is adjustable allowing the use of dies for a variety of articles and providing for different heights of dies as well as allowing for the wear on them. The lateral feed is in every way adjustable. An important feature not to be overlooked is the fact that at no time is it necessary for the operator to have his hands near the dies, thus doing away with all possible danger of accident to the operator.

The press runs at the rate of 75 to 100 strokes per minute, this depending on the size and shape of the shell on which the operations are to be done, performing from 225 to 300 operations per minute, entirely eliminating the intermediate handling between operations and saving much time, labor, and shop room.



BLISS AUTOMATIC GANG PRESS.

AN IMPROVED GEAR BOX.

The accompanying illustrations show an improved gear box designed by the Queen City Machine Tool Co., Cincinnati, O., and applied to its back-geared 20-inch crank shaper. The gear box has been devised with a view of presenting a rigid construction, free from complications and one in which shock and jars tending to shorten the lives of the gear box and the machine driven by it are absent. A gear box is often desirable on a machine on account of certain manifest advantages of the single pulley drive, and it is almost a necessity for a motor drive in which a constant speed motor is used. The gear box has been more nearly perfected in the automobile trade than in any other industry, and the gear box under discussion resembles, in many respects, the later and more modern types of automobile gear boxes.

The construction of the box is shown clearly by the drawings. Fig. 1 is a vertical section through the center lines of the gears. As will be seen, it comprises a gear box shaft, on which are mounted four gears of varying diameters, spaced the requisite distance apart. Between these gears, and sliding on the main driving shaft of the gear box, are placed two cones comprised of two gears each, also of varying diameters. By means of shifting levers, any one of the four gears in the two cones can be made to engage with its corresponding gear on the gear box shaft. The gear box shaft is driven by means of the pulley shown, or by a gear meshing with a pinion on a motor. The driving shaft carries a pair of gears meshing with a corresponding pair of driven gears on the driven shaft of the machine.

On the opposite end of the gear box shaft over the pulley is mounted the expanding ring of a clutch. The clutch cone and operating lever are also shown. The driving gear in the gear box is mounted upon a sleeve telescoping the driving shaft. This sleeve is an integral part of the clutch ring, so that but a single friction clutch is required, which easily engages and releases the driving shaft at all times. The successful operation of this gear box is due in a large measure to the use and simplicity of this telescopic sleeve and clutch construction.

The gears in the illustrations, Fig. 1, are shown disengaged and it will be noted that the length of the gear box is equal to the sum of the gear

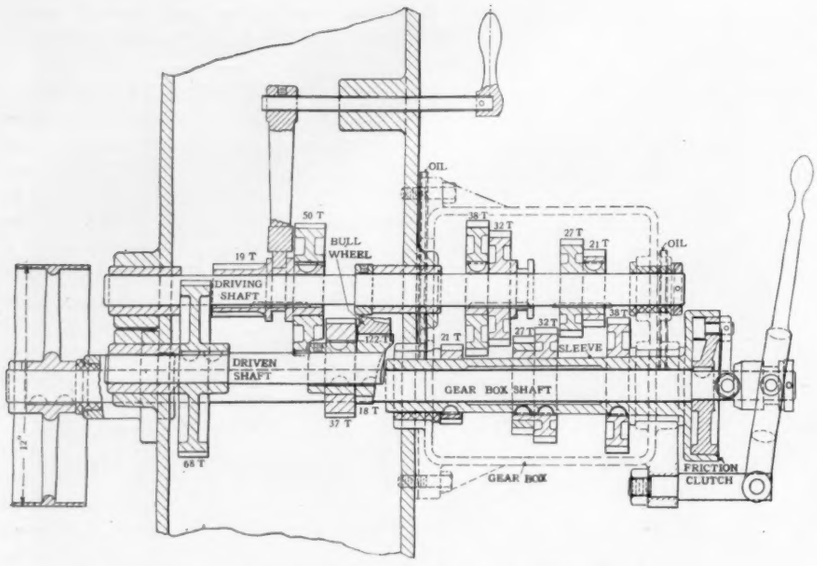


FIG. 1—SECTIONAL ELEVATION OF GEAR BOX.

faces plus a slight clearance. The floor space required by the box does not exceed that of the cone pulley drive. The operating mechanism for the gear box is shown in plan and elevation in Fig. 2. Three rods, two of which are continuous and movable, are attached to the back of the gear box; one of these carries a jaw engaging with one cone of gears on the driving shaft of the gear box, while the other carries a shifter running in the ring, fastened to the other cone. The fixed rod, which is discontinuous, is placed between the two movable rods and serves to prevent movement of the shifter lever, except when it is thrown either backwards or forwards to engage with the movable rod carrying the gear shifter. This arrangement prevents the moving of both cones at the same time, and renders the gears in the gear box non-interfering.

Four speeds are obtainable in the gear box itself, which range is doubled by means of the two gears on the driven and driving shaft of the box. The four gear box changes can be made in four seconds. This is rapid work, inasmuch as the expanding clutch and all the gears are each time automatically, securely and independently locked in the working and idle position, by means of a spring plunger.

When it is desired to shift the gears to change speeds, after throwing out the clutch, the driving shaft only is running. The telescopic sleeve continues to revolve, facilitating the intermeshing of the gears for the obtaining of the speed desired. As the load is entirely off when the gears are shifted, no shock occurs. When a constant speed motor is used, changes can be made without stopping it. If the shaper pulley be belted direct from the line shaft to run at 350 revolutions per minute, the following number of cutting strokes per minute may be obtained: 7.2, 10.96, 15.4, 23.5, 34.8, 53.1, 74.7, 114. An indicating plate is furnished which aids in choosing the proper speeds. The gear box proper is a press fit into the column of the shaper. In addition it is firmly bolted to the machine. The parts are readily accessible for inspection without removing the box from the column. The gears themselves run in oil and large brass tubes provide means of carrying the oil to the different journals.

Georgia Ore Purchase.—The Virginia Iron, Coal & Coke Co. has just purchased iron ore properties at Cartersville, Barton county, Ga. The ore will be used in the company's Virginia furnaces. The purchase price noted in the deeds of transfer aggregates $108,000.

The Lehigh & New England railroad has ordered 50 30-ton box cars from the American Car & Foundry Co.

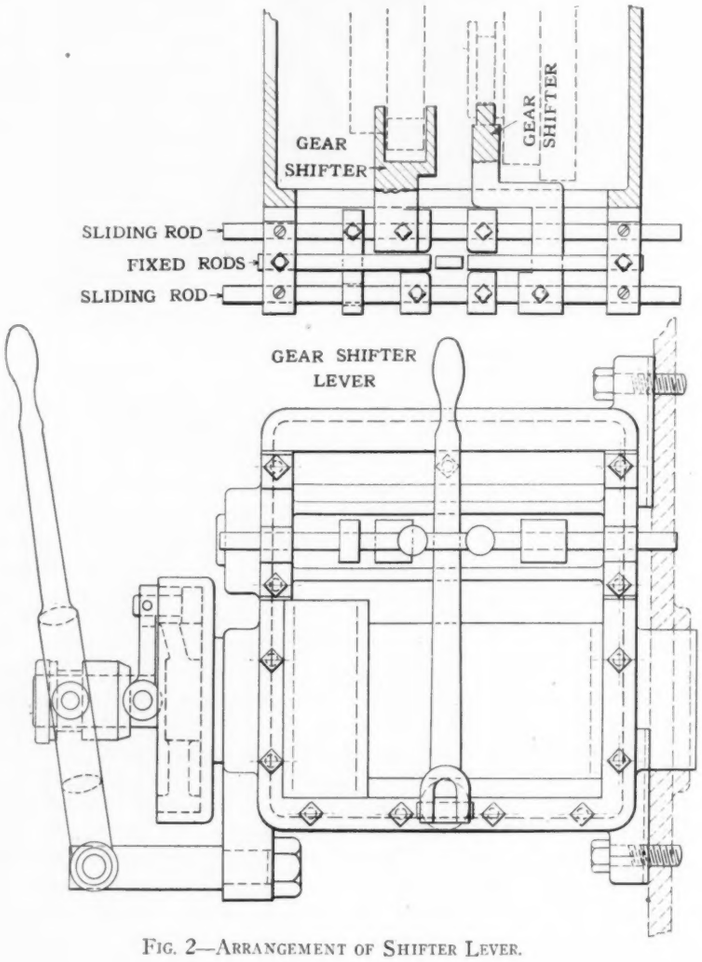


FIG. 2—ARRANGEMENT OF SHIFTER LEVER.

Investing Public Buys Bonds

Undoubted evidence of reviving confidence was shown in the financial circles of the country last week, and genuine improvement in the demand for investment securities, together with a general advance in market values, yet a significant warning was issued to stock market investors Saturday by a leading New York banking house. This warning, following the most active and the broadest market of the year, was to the effect that prices are advancing too rapidly. In the light of conferences between leading New York and British financiers held in London and on the continent the early part of last week, this is regarded as significant. Monday the subscription list for the Pennsylvania railroad's $40,000,000 4 per cent bonds opened for less than an hour, and the bonds were oversubscribed 30 times. Immediately afterward, another New York banking house offered $25,000,000 6 per cent three-year Interborough notes, which issue was oversubscribed. The cities of Philadelphia and Pittsburg made fairly large-sized loans, selling bonds at over 104, and a half dozen smaller corporation loans met a favorable reception. This emphasized the change in investment sentiment, especially in view of the added gold exports and the recall by the United States secretary of the treasury of $45,000,000 deposits on which payment is to be made in less than a month.

Although industrial stocks opened Monday less active and checked by profit-taking sales which again became apparent at the close of the week, advances in industrials were noted. Tuesday and Wednesday the number of shares exceeded a million each, there having been only one other million-share day on the stock exchange since the panic. Prices broke somewhat on the dull market of Thursday, but rallied again on Friday, closing active Saturday. All grades of copper were reduced a total of ¼ cent for the week. The Imperial bank of Germany reduced its discount rate from 5½ to 5 per cent. Call loans in New York were steady at from 1¾ to 2 per cent. The statement of the clearing house banks showed that they hold $62,352,900 more than the reserve requirements, an increase of $3,368,150 in cash reserve as compared with last week. Loans decreased $63,000,000; deposits increased $6,835,400; circulation decreased $1,116,900. The statement of non-member clearing house banks and trust companies of Greater New York showed deposits of $856,926,500; total cash on hand, $58,784,800, and loans $829,127,600. The total number of shares for the week was 4,559,613, compared with 2,851,640 last week and 3,824,565 for the corresponding week last year. Bonds, exclusive of government bonds, aggregated $19,949,000, compared with $26,624,000 last week and $7,803,000 for the corresponding week last year.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. May 2	Changes in Week	Date 1908 Ann. M't'g	Stock Outstanding	Dividend Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	8¼	− ⅛	Sept. 3	19.820 000			
Allis-Chalmers pr	20⅞	+ ¼		16 150.000	7 cum	1¾ Q.	Feb., 1904
American Can	5	− ¼	Feb. 3	41 233 300			
Am. Can pr	55	.....		41.233.300	7 cum	1¾ Q.	April, 1908
Am. Car & Foundry	85¼	+1½	June 25	30.000,000		1 Q.	April, 1908
Am. Car & Fdy. pr	96½	+1⅛		30 000.000	7 n. c.	1¾ Q.	April, 1908
American Loc	47½	+1	Oct. 20	25,000.000	5	1¼ Q.	May, 1903
American Loc. pr	100	+3		25 000.000	7 cum	1¾ Q.	April, 1908
American Ship	41	− ½	Oct. 14	7 60 000	4	1¼	April, 1908
American Ship pr	95	+1		7,900,000	7 n. c.	1¾ Q.	April, 1908
Am. Steel Foundries	63⅞	+ ⅛	Oct. 6	15 810 000			
Am. Steel Foundries pr	32⅛	−1⅞		17,240.000	6 cum	2½	Aug., 1 04
Barney & Smith	50	.....	June 2	2 0 0.000	4	1 Q.	Sept., 1907
Barney & Smith pr	90	.....		2 500 000	8 cum	2 Q.	Mar., 1908
Bethlehem S eel	14	−1	April 7	14,862.000			
Bethlehem Steel pr	36	.....		14 9 8 000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	29¾	.....	March 17	45.000 000*	6	1½ S. A.	Feb., 1903
Cambria Iron	46	+ ½		8,168.000*	4	2 S. A.	April, 1908
Chicago Pneumatic Tool	23	+ ⅛	Feb. 17	6,145.800	4	1 Q.	Oct., 1907
Colorado Fuel	24½	− ⅛	Oct. 19	34 235 500		3½	April, 1902
Crucible Steel	5⅛	+ ⅛	Oct. 21	24 578 400			
Crucible Steel pr	38¾	+1½		24,436.500	7 cum	1 Q.	Dec., 1907
Empire Steel	8	.....	Feb. 26	1,254.770			
Empire Steel pr	40	.....		2 500,000,	6 cum	3 S. A.	Jan., 1907
Fay & Egan	100	.....	Feb. 18	1,000.000	6	1½ Q.	July, 1907
Fay & Egan pr	110	.....		1,000 000	7 cum	1¾ Q.	Aug., 1907
General Electric	134½	− ¾	May 12	65,167.400	8	2 Q.	April, 1908
Harbison-Walker	10¼	.....	Jan. 20	18.000 000		½	Oct., 1907
Harbison-Walker pr	65	.....		9.6 0.000	6 cum	1½ Q.	April 1908
International Pump	24⅜	− ⅛	June 2	17.787 300		1	April, 1905
International Pump pr	70⅜	+ ⅜		13,835.000	6 cum	1½ Q.	Feb., 1908
Lackawanna Steel	32	−2	March 11	34,971 400			
Lake Sup. Corp	7⅛	− ⅛	Oct. 7	40.000 000			
New York Air Brake	68	−2¼	June 18	8 01 ,5 0	8	2 Q.	Oct., 1907
Niles-Bement-Pond	130	.....	Feb. 5	8. 00 000	6	1½ Q.	Mar., 1908
Niles-Bement-Pond pr	100	.....		2 000.000	6 cum	1½ Q.	Feb., 1908
Otis Elevator Co	34	+2	March 16	6 156.600		1½ S. A.	April, 1908
Otis Elevator Co. pr	84	+2		5 449 700	6 n. c.	1½ Q	April, 1908
Penn. Steel	60	.....	May 11	10.7 0 000			
Penn. Steel pr	92¼	− ⅛		16.5 0 400	7 n. c.	3½ S. A.	Nov., 1907
Pittsburg Coal Co	11⅛	− ¼	Feb. 10	28.853 400			Nov., 1906
Pittsburg Coal Co. pr	42	+ ⅜		27,030.800	7 c.	1¾	April, 1905
Pressed Steel Car	29½	+2¼	Feb. 19	12,500, 00		3	Aug., 1904
Pressed Steel Car pr	84½	+2¼		12.5 0.000	7 n. c.	1¾ Q.	Feb., 1908
Pullman	159	.....	Nov. 11	100 000 000	8	2 Q.	Feb., 1908
Railway Stl. Spring	36	+2	March 5	13,500.000	4	2 S. A.	April, 1908
Railway Stl Spring pr	80	+5		13,500.000	7 cum	1¾ Q.	Mar., 1908
Rep. Iron & Steel	17½	− ½	Oct. 21	27,191.000			
Rep Iron & Steel pr	67⅞	− ⅛		20,416 900	7 cum	1¾ Q.	April, 1908
Sloss-Sheffield	45⅛	+ ¼	March 11	10.000.000	5	1¼ Q.	Mar., 1908
Sloss-Sheffield pr	89¾	+ ¼		6.700 0 0	7 n. c.	1¾ Q.	April, 1905
U. S Pipe & Fdy	25	− ⅜	June 24	12.500.000	4	1 Q.	Dec., 1907
U. S. Pipe & Fdy pr	72½	+ ¾		12 500,000	7 n. c	1¾ Q.	Mar., 1908
U. S Steel	36⅛	.....	April 20	508,302,500	2 n. c.	½ Q.	Mar., 1908
U. S. Steel pr	101¼	+1⅜		360,281.100	7 cum	1¾ Q.	Feb., 1908
U. S. Steel 5's	94⅝	+ ⅛		463,798 000	5	5 A.	.....
Va. Iron Coal & Coke	50	.....	Nov. 17	9 073 ,50			
WestinghouseElec	51½	−5¼	June 24	23 933 200*	10	2½ Q.	Oct., 1907
WestinghouseAir Brake	98	−1¾	Oct. 6	11,000,000*		2½ Q.	April, 1908

Par value of shares $100. except those starred (*), $50

Copper Stocks.

New York.—Amalgamated Copper closed 60¼, no change from last week's close.

Boston.—Butte Coalition closed 22⅛, a net gain of ⅜; Calumet & Arizona closed 103½, a net gain of 2; Calumet & Hecla closed 642, a net gain of 7; North Butte Mining closed 58⅛, a net gain of 3⅝; Quincy Mining closed 81, a net loss of 2.

Financial Notes.

The La Belle Iron Works declared the regular quarterly dividend of 2 per cent, payable May 1; the Flannery Bolt Co., quarterly dividend of 5 per cent, payable April 30; the Electric Properties Co., paying up the accumulated preferred dividends and the full 6 per cent dividend for the year; the Shelby Iron Co. passed its annual divident, which last year was 5 per cent; the Pennsylvania Railroad, the semi-annual dividend of 3 per cent, a reduction of ½ per cent from last three declarations.

NEWS FROM MANY INDUSTRIES

New Buyers:

The Protectus Electrical Mfg. Co., Pittsburg, with a capital of $125,000, has been chartered by the following: E. L. Kern, J. K. Neagley, and N. F. Bicking, all of Pittsburg.

The Concentric Engine & Mfg. Co., Columbus, O., has been chartered by Joseph Segale, C. J. Segale, F. M. Lehner, A. J. Linde, G. W. Molinz and J. D. Karns. The capital stock is $50,000.

Anton Dishmaker, John B. Kiewig, Rolland C. Back, Fred J. Dishmaker and William Dishmaker have incorporated the Marvel Motor Works Co., Kewaunee, Wis. The capital stock is $30,000.

The Montague Machine Co., Portland, Me., machinery, has applied for a charter through its president, J. H. Pierce and treasurer, J. H. Ridge, Portland. The capital is $35,000.

George M. Bard, Francis N. Bard and Ralph A. Bard have incorporated the Barco Brass & Joint Co., 56 North Jefferson street, Chicago, to manufacture in brass, steel and iron, with an authorized capital of $15,000.

The Vesper Safety Clevis & Malleable Iron Co., village of Vesper, Wood county, Wis., has been incorporated by John N. Hays, C. R. Goldsworthy and R. L. Bartholomew, with an authorized capital of $30,000.

Lovell Iron & Metal Co., 820 Reaper building, Chicago, to deal in metals, has been chartered with a capital of $5,000 by Raymond L. Lovell, George W. Manierre and William T. Underwood.

E. L. Essley Machinery Co., 185 Dearborn street, Chicago, organized to manufacture machinery and tools, with $25,000 capital, has been incorporated by the following: E. L. Essley, B. E. Spangler, and David F. Noble.

The Hempstead Brass Co., Hempstead, N. Y., to manufacture hardware and plumbers' supplies, with a capital of $10,000, has these incorporators: John R. McLean, Ernest C. Muncke, Theophilus Parsons, all of Hempstead, N. Y.

The Straight Pin Co., 1119 Ashland block, Chicago, has been chartered to manufacture pins. Those interested in the new enterprise are R. F. Brett, A. W. Straight and Newton Wyeth. The company has a capital of $10,000.

The Nielson Mailing Machine Co., Portland, Me., tools, etc., with a capital of $500,000, has filed articles of incorporation through its president, A. F. Tupper, Arlington, Mass., and treasurer, G. F. Noyes, of Portland.

Herbert Sparks, 101 West 108th street; John Santora, 318 East 104th street, and John J. Pheelan, 11 West 106th street, all of New York City, have incorporated the American Nut Machine Co., Wilmington, Del., with a capital stock of $250,000.

Legnard Bros. Chicago, have incorporated with a capital of $5,000. The company will locate at 1617 Ashland block, and will manufacture gas and gasoline engines. The incorporators are: H. M. Legnard, Bessie L. Steele and A. B. Legnard.

Articles of incorporation have been filed by R. L. Brown, Edward K. Harris and Joseph L. McNab, all of Chicago, to manufacture railway supplies under the name of the Chicago Brake Shoe Co. The company is located at 100 Washington street, Chicago, and is capitalized at $5,000.

The New York Oil Cabinet Co., New York City, to manufacture oil tanks, oilers, filters, oil pumps, etc., has been incorporated by the following with a capital of $10,000: Jessie L. Goodspeed and Henry S. Goodspeed, 62 Columbia Heights; Franklin P. Thomas, 39 Bainbridge street, of Brooklyn.

The Electric Welding Co., Brooklyn, N. Y.; construction and repair work, electric welding, etc., with a capital of $24,000, has been incorporated by the following: Ove Lange, 260 Eighty-third street; Christian Nielsen, 209 Ninth street; Herman O. Amundsen, 269 Eighty-third street, all of Brooklyn, N. Y.

The D. G. C. Valve Co., New York City, to manufacture heating, ventilating, drying and refrigerating systems and appliances, with a capital of $300,000, has these incorporators: Leo A. McTighe, Chauncey Matlock; August E. Heerd, Brooklyn; James H. Davis, New York City, and Algernon R. Burnett, Hoboken, N. J.

The Railway Safety Appliance Co., Akron, O., has incorporated with a capitalization of $25,000. The company will manufacture a newly patented device for the safety of railway passengers and employes. Those interested are: C. R. Grant, E. L. Mitchell, A. LaCroix, Jacob Brown and John R. Price.

Frank L. Patterson & Co., New York City, have filed articles of incorporation to manufacture heating apparatus, steam, electrical and hydraulic machinery, etc., with a capital of $20,000. The incorporators are: Frank L. Patterson and Arthur B. Gratz, 26 Cortland street, New York City, and Isaac M. Patterson, Trenton, N. J.

The Reeder Electrical & Mfg. Co., Ltd., has been incorporated with $60,000 capital to manufacture electric and other lighting and heating fixtures, etc., at Toronto, the provisional directors being Albert W. Reeder, Robert Gowans, Arthur E. Bowen and E. H. Wilson.

The Canadian Steel Rolling Mills Co., Ltd., Campbellford, Ont., has been incorporated by Alfred H. McKeel, Charles E. Dunk, William J. Doxsee and others with a capital of $100,000.

Stephen H. Chapman, John H. Glover, Edward Fairbairn and others have been incorporated as the Aylmer Pump & Scale Co., Ltd., with $90,000, to manufacture pumps, machinery, etc., at Aylmer, Ont.

E. R. Boyle, W. B. Upton and C. H. Syme, of Washington, D. C., have organized the National Concrete Steel Co., with a capital of $100,000.

A charter has been granted to the Montague Machine Co., Portland, Me., machinery, through the following incorporators: President, J. H. Pierce; treasurer, J. H. Ridge, and clerk, D. W. Snow, all of Portland, Me.

Berkshire Mfg. Co., Boston, iron, steel, etc., has been chartered with a capital of $25,000, by the following officers: President, Charles S. Mason; treasurer, Emanuel Ashworth, and clerk, Tilly H. Eaton, all of Boston.

The Long Iron Co., Duluth, Minn., filed articles of incorporation through the following: Francis W. Sullivan, Sara L. McNulty and Richard F. Grant. The capitalization is $30,000, and the company will engage in mining upon the range.

Articles of incorporation have been filed by the Globe Foundry Co., Portchester, N. Y., to do a general foundry business, manufacturing pipe, boilers, etc., with a capital of $100,000. The incorporators are: W. A. Mills, F. M. Mills and H. L. Marshall Jr., Portchester, N. Y.

The Diamond Saw & Machine Co., New York City, to manufacture saws, sewing machines, etc., has been incorporated with an authorized capital

of $20,000. Those interested are E. D. Cronin, 889 Union street, Brooklyn, N. Y.; Fred Knowlton, 638 East 139th street, and C. Q. Dean, 1628 Amsterdam avenue, both of New York City.

With a capital stock of $10,000, the Wythe County Iron & Zinc Corporation, Wytheville, Va., has been chartered to do a mining business and deal in timber and mineral lands. The officers of the new company are as follows: J. F. Slaughter Jr., president, Lynchburg, Va.; R. T. Duke Jr., vice president, Charlotteville, Va.; M. M. Caldwell, secretary, Roanoke, Va.

Holroyd & Co., Waterford, Saratoga county, N. Y., have been incorporated for $60,000 by William Holroyd, George E. Holroyd and William F. Holroyd, all of Waterford. They will carry on a machinery business.

The John Jordis Iron Works, located at 354 Robbins avenue, New York City, have been incorporated for $20,000 by John Jordis, Marie Jordis and Eugene Sommer. Ornamental iron work is done and no change in the business is contemplated.

J. Henry Essler, an attorney at 11 North Eighth street, Mount Vernon, N. Y., is one of the incorporators of the Venus Novelty & Tool Co., Mount Vernon. Its capitalization is $25,000.

The Milwaukee Steel Fence Post Co., Milwaukee, Wis., has been incorporated with an authorized capital of $25,000 by Frank R. Ellis, G. L. Prescott, John R. Graydon and Chris Jensen.

The National Zinc Corporation with an authorized capital of $6,000,000, has filed articles of incorporation at Camden, N. J. K. M. Collbaugh, with offices in the Witherspoon building, William J. Wilde, 1227 North 26th street, both of Philadelphia, and G. B. Evans, of Camden, are the incorporators.

The Ciglia Shock Preventer Co., New York City, has been chartered with a capital of $100,000, to manufacture articles pertaining to automobiles, motor cars, boats, launches, etc. The incorporators of the new company are Ernest F. Siglia and Louis F. Pelletier, 176 West Seventy-second street, and James W. Samuel, 43 Exchange Place, all of New York City.

The National Vacuum Co., New York City, has filed articles of incorporation through Henry S. Thompson, Greenwich, Conn.; Jabez C. Gilbert, Plainfield, N. J.; Spencer S. Baldwin, 101 Clermont avenue, Brooklyn; Frederick B. Cochran, 5 Nassau street, and Samuel G. Metcalf, 15 Wall street, both of New York City. The new company is organized to manufacture machinery, tools and appliances for vacuum or pneumatic cleaning; and is capitalized at $150,000.

New Construction:—

Dominy & Supple, Cascade, Ia., are erecting a new machine shop 30 x 80 feet.

The Western Machine Co., St. Paul, Minn., has let bids for the erection of a brick machine shop to cost $5,000.

The Knoxville Iron Co., Knoxville, Tenn., is planning to erect a machine shop 50 x 80 feet, at a cost of $2,000.

The Milwaukee Bronze Co., Milwaukee, has taken out a building permit to build a brick and stone foundry, to cost $4,500.

South Bros., formerly of Hartford City, Ind., are installing new machinery at their boiler works, which has been removed to Vincennes, Ind.

The Glacier Metal Co., Richmond, Va., has plans prepared for erecting at Manchester, Va., a building 40 x 100 feet, in which it will manufacture Glacier anti-friction metal.

The Oklahoma Iron Works, Tulsa, Okla., plans with its increased capital stock to erect a building of reinforced concrete, 28 x 100 feet, to contain pattern department, drafting rooms, offices and store rooms.

Preparations for the opening of the Cherryvale Iron Works, Cherryvale, Kans., are progressing, and machinery is being installed. H. E. Esch, president and manager of the company, has placed his resignation before the directors of the United Iron Works, at Independence, Kans.

The Youngstown Furnace & Supply Co., Youngstown, O., which recently took over the Pennsylvania Stove Co., Ellwood City, Pa., is building a brick addition to its plant, two stories high, 50 x 200 feet, for use as a warehouse and mounting room, with a wing 25 x 60 feet to be used as a nickeling room.

Chicago architects are preparing plans for a large manufacturing building to be built at the south end of South Market street, with a river frontage of about 300 feet. The structure is to be 17 stories, fire proof, at an estimated cost of about $2,000,000. It is the intention of the company which is being formed to rent the building to manufacturing concerns.

The Independent Stove Co., Detroit, Mich., announcement of whose plan to remove its plant to Owosso, Mich., was recently made, has begun the erection at Owosso of its new buildings. The foundry building is 72 x 150 feet, and will accommodate 35 molders; the assembling and storage building will be 60 x 150 feet, two stories high. These buildings will be substantially built of brick and will give the company 50 per cent more capacity than it possesses at its Detroit plant. The company started operations less than two years ago, and during that time found it necessary to build three additions to the original plant, and has finally outgrown its present quarters. It started with a capital of $30,000 which was increased to $60,000, a year ago, and the company has now increased it to $100,000. At present the company employs 60 mechanics, and with its new plant this force will be increased to 100.

The Buckeye Steel Casting Co., Columbus, O., has let the contract for the erection of a new building, 20 x 40 feet, for a producer gas plant, to the Mount Vernon Bridge Co. Plans are also being drawn by the engineers of the company for a new building to be used as a pattern shop, of steel construction.

Ground has been broken near Ellwood City, Pa., for the erection of the plant of the United States Metal Recovery Co. The company was organized several years ago by Robert McKnight, the inventor of the process for the recovery of metals from valuable ores which have been worked over, and the Ellwood plant will be operated to extract from crude ores such metals as tungsten, vanadium, tellurium, etc. The company is capitalized at $5,000,000, and the officers are Robert McKnight, president; Jean De Backer, vice president, and Walter S. Smith, secretary and treasurer. The directors are: James P. Barrett, A. J. Martin and John H. Bohnet.

General Industrial:—

The Brodhead Iron Mining Co., Milwaukee, has filed notice of dissolution.

The United States Standard Electrical Works, Racine, Wis., has filed an amendment changing the name to the Standard Electrical Works.

Louis Engleman & Son, Benton Harbor, Mich., have sold their foundry to the Covell Mfg. Co., the latter company taking possession at once.

The Sherman-Lemke Coil & Supply Co., Milwaukee, has filed amendment to its articles of incorporation changing its name to the Lemke-Briggs Electric Co.

The Cleveland-Cliffs Iron Co. has

incorporated in Wisconsin to care for its Wisconsin interests. A financial statement filed places those interests at $9,363.

The Reliance Engineering Co., Columbus, O., has been awarded the contract for the construction of the electric light plant at Spencer, Ind., to cost $35,000.

The Independent Harvester Co., a Portland, Me., corporation, has incorporated in Illinois, naming its place of business 59 Clark street, Chicago, to manufacture harvesting machinery and implements with a capital of $1,000,000.

The offices of Superintendent Robert O'Neil, of the Colorado Fuel & Iron Co., at Trinidad, Colo., have been closed and the local officials moved to Pueblo, where the general offices of the company were recently established.

The Summit Foundry Co., East Akron, O., recently incorporated, announces that it has organized to do a general jobbing business. It is now occupying a foundry 40 x 70 feet, equipped with steam power, but no machine shop, with a capacity of 10 tons per heat.

The annual meeting of the Electric Co. of America, recently held at Camden, N. J., proved to be merely a formal affair. Three changes in the directorate were made during the year, G. B. Roberts, H. S. Kerbaugh and J. E. Hays resigning, and were succeeded by E. R. Snowdon, E. D. C. Catherwood and John B. Morton. The other directors were re-elected.

The recent incorporation of the Terre Haute Furnace & Sheet Metal Co., Terre Haute, Ind., has not only involved a change of name from the Terre Haute Stove & Furnace Co., but also some changes in stockholders, and the dropping out of the stove manufacturing to take up hot water and steam heating and adding facilities for handling a larger business in sheet metal work.

The Reading Iron Co. announces that it has been making plans for a new mill, but that it is probable that nothing will be done with the mill this year. The company says further that it can not build until the city of Reading, Pa., has built a new sewer to divert a creek which now runs through the site of the proposed mill. No date for the completion of the sewer has been set.

Trade Notes:—

The Canadian sales office of the National Malleable Castings Co., Cleveland, O., has been moved to 710 Canadian Express building, Montreal, Que.

To improve facilities the Sargent Steam Meter Co. has moved its office and laboratory to 271 to 285 East Madison street, Chicago.

The Electric Controller & Supply Co., Cleveland, O., announces the removal of its New York office from 120 Liberty street to the Fulton building, Hudson Terminal, 50 Church street.

The National Plow Association, Chicago, announces that it has located its new offices at 525-527-529, the American Trust building, northeast corner of Clark and Monroe streets.

The W. F. Robertson Steel & Iron Co., Cincinnati, is distributing to the trade handsome calendars for May and June, choosing as subjects for illustration the choice works of James Arthur.

B. A. Behrend, chief electrical engineer of the Allis-Chalmers Co., and chief engineer of the Bullock Electric Mfg. Co., announces that his offices have been removed from Cincinnati to Milwaukee.

The Railway Material Co. announces that after May 1 the New York offices are located on the 30th floor, rooms 3004 and 3005, of the new Singer building, northwest corner of Broadway and Liberty.

The New York office of the Morgan Engineering Co., Alliance, O., formerly located at 501 Trinity building, 101 Broadway, New York City, has been moved to 165 Broadway, City Investing building, room 1106. R. J. Parker still retains the management of the New York office.

Rogers-Brown & Co. have moved from the quarters they have occupied in the Monadnock building, Chicago, for the past 14 years into the Corn Exchange Bank building, just being completed at the corner of La Salle and Adams streets. The new offices are in the group of rooms numbered 1515 to 1530.

The district office maintained by the Allis-Chalmers Co., at San Francisco, in charge of H. D. Scribner as manager, has been removed from the Atlas building to the Phillips building, just a few steps from one building to the other, and callers will have no difficulty in finding the new location.

O. C. White & Co., Worcester, Mass., have opened a New York office and store room at 19 Park place, and 16 Murray street, for the sale and display of Standard adjustable electric fixtures. The New York branch is to be in the hands of Frederick Rall, well known in the electrical trade in New York.

The Cassier Magazine Co. announces the removal of its New York offices from No. 3 West Twenty-ninth street to No. 12 West Thirty-first street, to which latter address all communications should hereafter be sent. The new home of *Cassier's Magazine* is in the office building just erected on the site of the former house of the American Society of Mechanical Engineers.

Robert W. Hunt & Co. have established an analytical chemical laboratory in connection with the St. Louis office, 1445 Syndicate Trust building. In addition to general analytical work, particular attention will be given to analyses of and advice on iron foundry mixtures. This work and the laboratory will be under the direction of J. B. Emerson, for several years past in charge of the metallurgical part of the wheel foundry of the Mt. Vernon Car Co.

Fires:—

The Union Iron Works, Decatur, Ill., April 26, sustained about $5,000 damage by fire.

The Holland furnace, at Holland, Mich., was damaged to the extent of $4,000, April 24.

Fire in the pattern room of the Union Works, Decatur, Ill., April 25, damaged the plant to the extent of $6,000.

The government steel plant at Abukhoff, Russia, April 26, suffered a loss by fire of about $2,000,000.

Fire in the foundry of the A. P. Smith Mfg. Co., Newark, N. J., April 21, caused a loss of $2,000.

The foundry of John Herrying, Napanee, Ont., owned by Sir R. J. Cartwright, was damaged to the extent of about $10,000, April 24.

The plant of the Hubley Mfg. Co., Lancaster, Pa., sustained a loss of $50,000 on buildings and machinery, by a fire, April 21.

Sparks from a cupola in the plant of the Bucks Stove & Range Co., St. Louis, Mo., April 22, caused $3,000 damage to the plant.

The foundry and pattern works of Smith & Loughlin, Buffalo, was seriously damaged April 23. The loss is estimated at $100,000, $50,000 alone on the patterns.

The locomotive erecting shop of the Chicago & Alton and the general offices of the motive power department adjoining, Bloomington, Ill., were badly damaged by fire, April 29. The loss is about $50,000.

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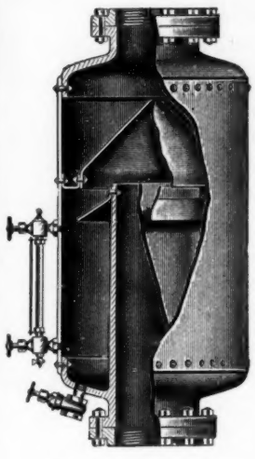

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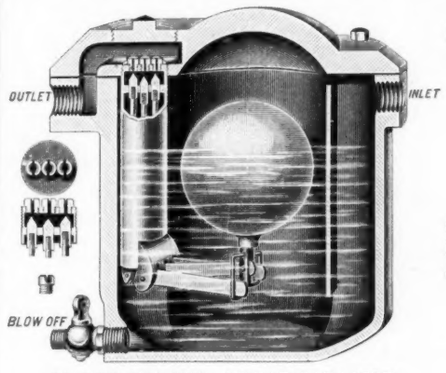

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